Ma[illegible]-7 1987 Vol 6 No 17 60p

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POPULAR Computing WEEKLY

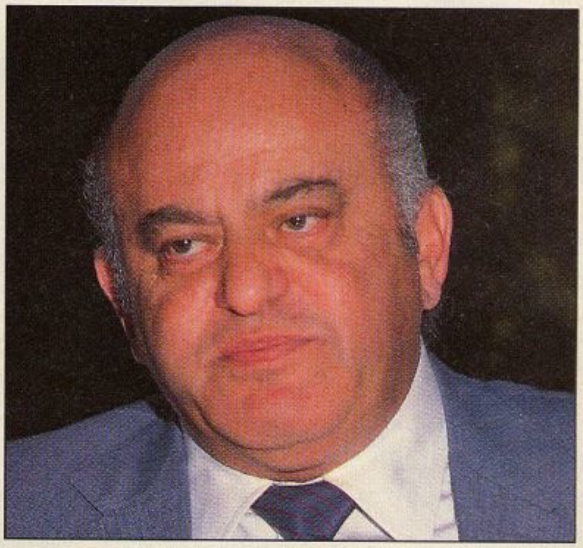
Clone wars: Atari UK launches second PC micro range

Full details on page 6

Six pages of news

Is your PCW a Wimp?

Programming in C



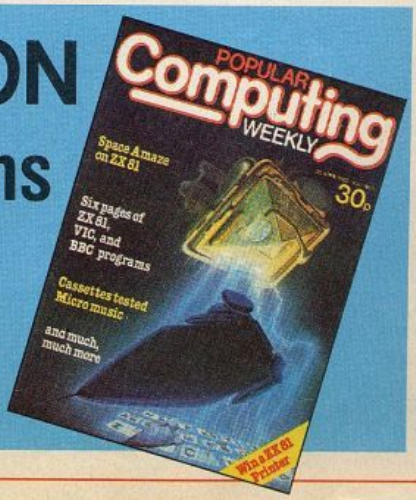
Atari chairman Jack Tramiel

5

FIVE YEARS ON

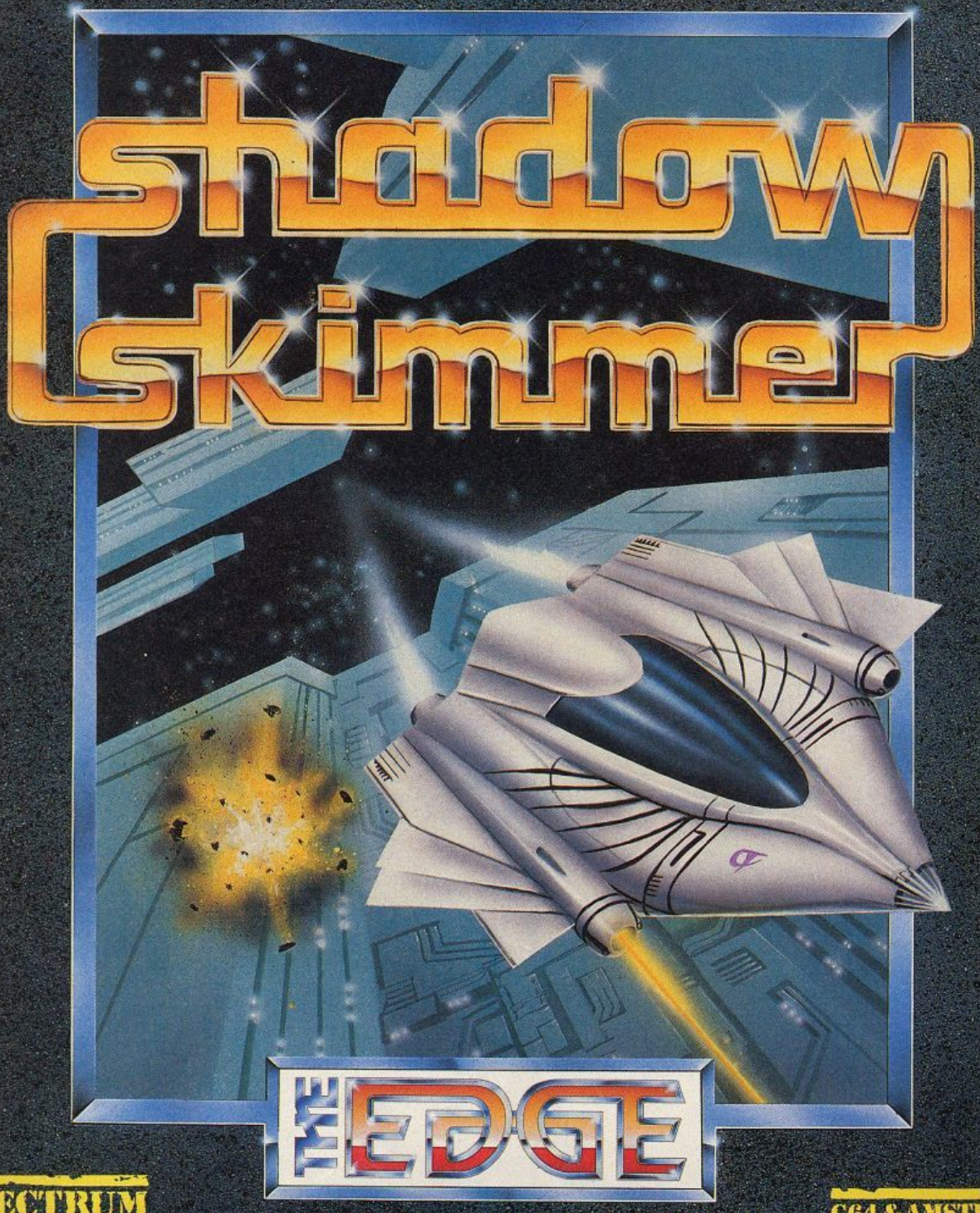
Join the celebrations for Popular's

FIFTH BIRTHDAY



"BREATHTAKING"

A dazzling, supersmooth, super fast space combat game featuring unbelievable full colour screens and pulse racing action like you've never experienced before!



SPECTRUM 7.95

"Jaws dropped when SHADOW SKIMMER came into the office. Leads were checked, heads were shaken... the smoothest scrolling, attribute – clash free game you've ever seen... breathtaking."
SINCLAIR USER (CLASSIC)

C64 & AMSTRAD 8.95

May 1–7

POPULAR Computing WEEKLY

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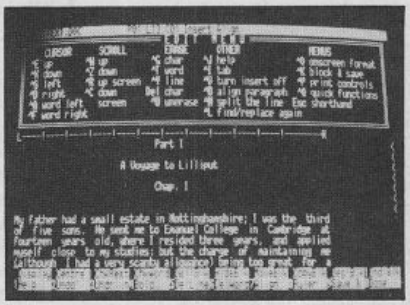

Top: Atari's entry level PC – see News Desk. Above: Wordstar Professional 4. Below: Arkanoid, by Imagine, Popular's first Hall of Fame Member.

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ABC

How to submit articles Articles which are submitted for publication should not be more than 2000 words long. The articles, and any accompanying programs, should be original. It is breaking the law of copyright to copy programs out of other magazines and submit them here – so please do not be tempted. We cannot guarantee to return your programs – so please do not send your only copy. **Accuracy** *Popular Computing Weekly* cannot accept any responsibility for any errors in programs we publish, although we will always try our best to make sure programs work.

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LETTERS

True amateurs

I noted your comments regarding the tape magazine *Shake* in the Spectrum supplement, March 20, and also the comments by *Shake*'s editor Roger Foster (Letters, April 3).

It would seem that the "amateur bands" referred to do, in fact, play for financial consideration and therefore it would appear they are not entitled to the status of 'amateur' which implies they are doing it 'for love'.

Due to the misuse of the word 'amateur', many people now confuse it with 'novice', whereas to people who understand its correct meaning, 'amateur' has far higher status than 'professional' (ie, golf, rugby, etc).

Ron James
Preston

IPSO factors

As your magazine is probably the first to show any interest in publishing programs written for the world's most popular computer, the Psion Organiser (*are you sure about this? Ed*), I am sure that at least some of your readers will be pleased to know that there is now an Independent Psion Organiser user group, IPSO. Anyone requiring further information, including a membership application, should send a SAE to IPSO, 130 Stapleford Lane, Beeston, Nottingham NG9 6GB.

Mike O'Regan
IPSO Group Organiser

Not dead yet

I am writing to inform you of a Dragon user group, which has been supporting the Dragon for over two years.

It is the NDUG (National Association of Dragon Users) [sic], and was set up in order to counteract claims that the Dragon is 'dead'.

Subscription charges are just £8 (£9 overseas), for which a monthly newsletter and help in all aspects of Dragon computing is offered.

Further information can be obtained from the chairman, Paul Grade, 6 Navarino Road, Worthing, Sussex.

S Jones
Harlow, Essex

The French QL section

As you are one of the few magazines still supporting the Sinclair QL, and as you do have a wide readership also in France, I would like you to mention the birth of a QL users club in France. It is called QL Contact France and can be contacted by any interested person at the following address: QL Contact France, 38–40 Rue Stéphenson, 75018 Paris (France).

Wolfgang Lenerz
Paris

Life north of Watford

I intend to take up your offer of 30% off a Spectrum teletext adaptor, even though I have no chance of being one of the lucky 150. The reason is that I live north of Watford!

Seeing that *Popular* can be purchased in London on Thursday, and presuming the teletext units are sold on a 'first come first served' basis, then all 150 units will go to people in the London area.

I hope your future offers and competitions will be 'fair' to the whole of the country.

Michael Scott
Preston

While the Volex offer proved particularly popular, and sold out quickly, many of the 150 went to applicants outside London.

A pirate or a cheat?

The viability of software companies can only be good for the users and, with suitable incentives, programmers alike. Therefore, they should be adequately protected by law against being 'ripped off' by the back-room bootleggers. By the same token, the user should be protected against being 'ripped off' by companies who offer fourth-rate programs at top quality prices.

It becomes easy to understand why many users seek to make themselves an illicit copy now and then. For many others, hacking is all part of the fun. It's a pity that so often more effort has been put into the protection than the game itself!

For me, the worst kind of pirate is the cheat who copies a listing from a book and submits it to a magazine as his own. At least other pirates do it for financial gain (although that does not excuse it!); but the cheat just does it for the undeserved glory.

A prime example is a Spectrum Mortgage Calculator I copied from a magazine last year, for future use. A typing error produced garbage and I initially assumed the formula to be faulty and, seeking an alternative, found the identical program in an MSX book (allowing for the trivial changes in dialect), absolutely verbatim.

Book listings usually have little or no commercial value, but I've often been inspired to alter the odd utility, etc, to improve user-friendliness or the display and sometimes shorten by more efficient use of the Basic: but how different must it be before I can call it 'mine'?

Then again, how different *can* one make it, as efficient Basic is still Basic: formula is still formula and the operating system (which itself is copyright) is unchangeable from the keyboard.

George W Payne
Watford

Figuring it all out

As George Payne says (Letters, April 3), Sinclair set a standard in computing but it had nothing to do with '8-bits' and the associated restriction 256. Try the following benchmarks. The first is a test for recursion and the second evaluates string handling.

No stopwatch required – just note the final figure.

```
Bm A  10 A = -1
      20 A = A + 1
      30 PRINT AT 1,1 ; A
      40 GOSUB 20
Bm B  10 B$ = "B"
      20 B$ = B$ + "B"
      30 PRINT AT 1,1 ; LEN B$
      40 GOTO 20
```

Some results:

	RAM	Bm A	Bm B
Spectrum	48K	13802	13810
QL	128K	11010	32766
ZX 81	1K	353	245
CPC 464	64K	83	255
BBC B	32K	14	255

A more complete list would be headed by the American supercomputers – the Mac, with its byte-wise efficiency and the Amiga with its segmented efficiency. I'd be interested in the figures and perhaps G Payne, R W Hogarty and the MSX chap could help complete the picture.

Geoffrey Wearmouth
London N17

Hats off to Epson

I recently bought an Epson RX printer cheaply at an auction. The penalty for the price, though, was the lack of any leads or documentation and as the RX range has been superseded by more recent Epson developments, I was having great trouble obtaining certain details about the printer.

Desperate for knowledge, I wrote to Epson enquiring about the availability and cost of the manual. Several days later, through the post, came the relevant manual detailing all the information I required. As a result, the printer is up and printing perfectly.

I would like then, through your pages, to express my grateful thanks to Epson for its great service and help.

James Barrie
Northampton

The best of both worlds

On the Letters front, Mr Snelson of Stockport (April 10) is a confused rather than disenchanted user, I feel, who wants the best of both 8-bit and 16-bit worlds.

Of course, if one doesn't mind using cassette-based software on an 8-bit computer, it is nice to be able to buy simple programs for £1.99 each.

But discs, particularly the technically superior 3½ inch discs, are about ten times as expensive as cassettes in both blank and pre-recorded forms.

So my advice is to shop around for £25 ST games, and also to consider budget labels like Tynesoft and, shortly, Mastertronic.

To accuse Atari of muddled marketing is quite unfair, as it also sells 8-bit, cassette-based models.

However, Mr Snelsdon chose to buy Atari's Motorola MC68000-based offering, which has both business and games versions of varying random access memory.

The 1040ST is a cheap but sound alternative to the much-acclaimed Apple Macintosh.

And Atari's forthcoming Mega STs are only slightly behind the new, more powerful additions to the Macintosh range. And ST software has shown remarkable progress to date.

Having said all that, there seems no doubt that Mr Snelsdon was cruelly deceived about IBM compatibility without an additional hardware emulator, and Robtek's software emulator cannot yet claim 100% compatibility.

Michael Kingston
Bristol

Three questions

I have recently purchased an Amiga A1000 and 1081 monitor. However, I did not receive a cable with which I can connect my Commodore 128 to the 1081 monitor, in order to obtain 80 column mode. Could you please tell me where I can obtain one of these leads and the approximate cost of such an item?

Also, could you please urge Beyond to release an Amiga version of its excellent *Star Trek* game?

Lastly, I have two friends called Jose Costa-Correa and Jason Shattu who are, at present, programming marketable standard games. I would like to ask on their behalf how one could get a game released and distributed. Both are young and could do with advice on this matter.

D W Norman
London W4

Using your Commodore 128 with an Amiga monitor is not a straightforward operation, since the C128 has an RGBI output, while the 1081's input is plain RGB. You can obtain 80 column mode on the C128 with a standard monochrome monitor. See Letters, April 10 for previous correspondence on this issue.

Beyond tells us that an Amiga version of *Star Trek* is planned, "possibly before the end of the year". While we would like to be able to take the credit for "urging" them to do it, they actually thought of the idea themselves.

Lastly, there isn't space here to detail all the steps your programmer friends could and should take, but *Popular*, December 18, 1986, ran a full length feature on how to get your programs published commercially. Back numbers, if you don't have the issue, are available from Annmarie O'Dwyer on 01-437 4343.

"Hold it! We've just brought out another new machine!"

Frustrated by Amiga

I am rarely inclined to write to magazines, but feel on this occasion I must write and express my frustration at the position regarding the Commodore Amiga 1000.

The advertising literature describes this as a fast *business* system, with a range of high quality software, but when I wished to upgrade my Commodore 64 system to the Amiga, I tried to obtain a payroll package for it, but to no avail. I then tried to obtain a suitable accounting package, but it seems one can only obtain an American package in dollars.

I know that the 68000 chip is new to programmers, but the Atari STs have two payroll packages available, and numerous account packages.

The Amiga 1000 is not really new, in terms of computer time scales, as the fact that the Amiga 500 and 2000 are ready to come on the market prove. So why is it so short on software? Commodore insists that it will continue to support it, but will it ever be mentioned once the 500 and 2000 arrive on the scene? I once thought of upgrading to the 128D, but this hardly gets a mention now.

Your columnist W E Page complains about being unable to get 'hands-on' experience of computers and software, and I think this is a very big stumbling block to the business user coming into computerised accounts for the first time. Even if computer sales staff do understand the software they are selling, they are reluctant to break open a new package just for demonstration purposes, so one is expected to take in on trust, especially if they have to order it for you.

The Inland Revenue has just issued a leaflet encouraging small businesses to put their payroll on computer, now that they are so 'cheap'. Judging by the amount of advice that is available to anyone seeking one of the cheaper systems, many business users will end up confused and out of pocket, and will face increased bills from their accountants, when their accounts have to be sorted out.

The Amiga 1000 could be an excellent business system, as it includes the cost of a colour monitor, so come on Commodore, how do I get a payroll and accounts package for it?

S Cutter
Birmingham

Commodore tell us that there are two payroll and accounting packages available for the Amiga: *Financial Cookbook*, which is around £45, and *Mi Amiga Ledger* at about £80. Both can be obtained from either Precision Software (01-330 7166) or Silica Shop (01-309 0300).

We're sorry but *Popular Computing Weekly* cannot guarantee to reply to *all* letters requesting a personal answer. It helps us enormously if readers are prepared to have general queries answered on these pages, so, if possible, please do not send SAEs.

Castling to safety

The chess tournament is back after its short Easter break. We're with Game One this week, and the readers, playing black, have moved their awkward queen to d5. This finally allows *Colossus*'s king to castle to relative safety.

Containing the attack

Black now has many ways of containing this attack. What would you choose? Send your suggested Readers move to *either* Inter-Mediates (*Popular* Chess), Freepost, Sawbridgeworth, Herts CM21 9YA (no stamp needed), *or* *Popular* Chess, Unit 2, The Maltings, Sawbridgeworth, Herts CM21 0PG (with a stamp).

Please note that Freepost is slower than paid-for mail. All entries must reach either address by Wednesday, May 6.

The move which gets the most votes will be entered into the game.

Prizes

A British Museum reproduction Arran chess set will go to the person suggesting the most accepted moves at the end of the game. Five copies of *Colossus Chess 4* will go to the most consistent entrants.

Game One

The moves so far:

1	Pe2-e4	Pc7-c5
2	Ng1-f3	Nb8-c6
3	Bf1-c4	Ng8-f6
4	Nf3-g5	Pd7-d5
5	Pe4xd5	Nc6-a5
6	Bc4-b5+	Pc7-c6
7	Pd5xc6	Pb7xc6
8	Bb5-e2	Ph7-h6
9	Ng5-f3	Pe5-e4
10	Nf3-e5	Bf8-d6
11	Pd2-d4	Pe4-d3 (en passant)
12	Ne5xd3	Qd8-c7
13	Nb1-c3	Ke8-g8 o-o
14	Pf2-f4	Qc7-b6
15	Nc3-a4	Qb6-d4
16	Pc2-3	Qd4-d5
17	Ke1-g1 (o-o)	?

Atari's expandable PC system heats up cheap clone wars

Atari's PC compatible "expandable system"

ATARI has lowered the prices and raised the stakes in the IBM PC clone wars with the UK launch of its PC compatible machine.

And to maintain its prolific reputation, it launched yet another new machine at the higher end of the PC market.

First previewed at the January Consumer Electronics Show in the US, the low-end machine is now dubbed the "entry level system".

Everyone knew the specification, everyone knew the machine was going to be cheap, but until the opening of the Atari Show last Friday, no one knew just how cheap.

For £399.95, including VAT, Atari is offering a 512K, single disc micro which features a built-in graphics card that supports EGA, CGA and Hercules display standards.

This display flexibility is what gives the Atari PC the edge over Amstrad's PC1512. And since the Atari machine will include a monochrome monitor for an extra £100, it is also some £15 cheaper.

The Atari PC uses an Intel 8088 processor switchable between the standard speeds of 4.77 and 8mHz. Memory is expandable to 640K, there is room for a second internal floppy disc drive, and parallel interfaces are standard.

The more sophisticated model, called the "expandable system", is physically larger and houses five IPM standard expansion slots for plug-in cards.

Variations on the theme include a single floppy or twin-floppy models, or a single floppy with built-in 20Mb hard disc.

Prices are £599.95 for a twin drive model and monochrome monitor, and £999.95 for the hard disc version. VAT is included in all prices.

The PCs brought to five the total number of Atari hardware systems launched at the show. There were also two models of the Mega STs, the new 65XE video games system, and the price busting laser printer.

The printer will arrive in June and Atari is not putting a price on it until then, presumably in the hope that it can bring down the price still further. Look for a sub-£1,000 tag.

The entry level PC will go on sale in June, with the expandable systems following "in the autumn".

For a full report on the Atari User show, see page 9.

SBC ADDS NEW PCs TO ITS RANGE

THREE DAYS BEFORE Atari's announcement, Spectrum Group declared that it has increased its involvement in the fast-growing PC clone market with a new range of compatibles to add to the Bondwell – and chief Mike Stern had this message for the industry: "We're going to take on you-know-who with a vengeance." He added: "We know how too."

The new SBC (Spectrum Business Computers) range features seven machines all designed to compete with other compatibles, but primarily aimed at the Amstrad PC1512.

The launch of the new machines is partly seen as an attempt to help Spectrum dealers compete with the successful relationships formed between Amstrad and retailers such as Dixons. But Stern would not be drawn on whether he hoped to get SBC machines stocked by the major high street retailers.

The entry level XT-compatible FD comes with twin floppy disc drives, a 5.5 or 8Mhz Nec V40 microprocessor, 640K Ram, 4 expansion slots, 84 key XT-compatible keyboard, MS DOS 3.2 and GW BASIC 3.2, maths coprocessor socket, serial and parallel ports, 135W power supply rating, and a monochrome graphics and CGA colour changeover switch. It will cost £704 inclusive.

The Mistral range is based on a 80286 board made by British Aerospace at Filton using surface-mounted technology. This is one of the main features of IBM's recently-launched Personal System/2.

The machine runs at 6, 8 or 12Mbz, has 1Mb Ram and a 30Mb hard disc as standard, and a potential configuration with up to 4Mb Ram and 190Mb hard disc units. Prices, which include MS DOS 3.2, GW Basic 3.2, VAT and a full 12 month on-site maintenance contract, are £2,116 (mono), £2,351 (CGA) and £2,587 (EGA).

The £704 machine is also supplied with a 12 inch green monitor; the £940 FDC has a medium resolution 14 inch colour monitor.

There are two hard disc versions. The monochrome HD20, £1,175, and colour HD20C, £1,410, have one 360K floppy drive and a 20Mb hard disc.

The SBC FD – £704 with a green screen monitor

Commodore president resigns after board row

THE president and chief executive of Commodore International, Tom Rattigan has resigned his post and subsequently started legal action against the company.

This action move comes at the same time as the board of directors has elected not only a new chief executive, but a whole new US management team.

Commodore's long-time chairman, Irving Gould is the new chief executive of Commodore International. "I look forward to ensuring strong leadership at all significant levels of management, particularly to strengthen the sales function and establish expanded distribution in the US," he said.

A Commodore spokeswoman was unable to offer any further information on the reasons for Rattigan's departure, but she emphasised the importance of Gould's remarks.

Rattigan claims that the company has breached his contract of employment by materially diminishing his duties and responsibilities.

But it looks very likely that the board – anxious to install the new team – made Rattigan an offer he couldn't refuse.

Rattigan: started legal action

Other changes include the appointment of Alfred Duncan as General Manager of US operations and Richard McIntyre as General Sales Manager for US operations.

The US management moves are the latest surprise from Commodore. Last month the company's UK chief Chris Kaday left in mysterious circumstances (see *Popular Computing Weekly*, 10–16 April).

NEWS DESK
Atari show report – p9
'Trade wars' – the micro threat – p10
Future of the PCW 8512 –p13

SOFTWARE HOTLINES

Regular readers will recall that **Palace's** latest game, *Barbarian,* has been promoted in the computer press (though not this particular magazine) with a piccy of Page 3 cutie Maria Whittaker, kneeling before a hunky viking type. Tacky indeed, but if your sexism nodes withered at the thought of that, then don't go anywhere near the Palace Kings Cross programming offices.

They're more like a shrine to the mammary gland, with blank wallspace at a high premium.

Nevertheless, the game is set to be one of the best combat games around.

It's all cut and thrust with the action under elegant joystick control. Animation is superb and those clever Palace people have devised a method that really does make the 'intelligent' computer opponent, intelligent.

Add to this lot the particularly gory graphics (watch that blood spurt from the neck during the decapitation – which doesn't come out too well in the black and white below) makes Barbarian a sure fire winner.

CRL seems to be continuing its equally unhealthy dalliance with the macabre.

After *Dracula (15)* it has now commissioned St Brides to write a Jack the Ripper adventure, using Gilsoft's *PAW.* CRL claims it will be a 'serious portrayal' of the gammy deaths, but the Dear Ladies of St Brides will be sure to spring the odd (and I mean odd) surprise.

The other pic this week is a super highly exclusive preview shot of *Heroquest* – the *Swords & Sorcery* follow up from **PSS.**

This time, the scene is set in a castle of an evil wizard, and you have nine quests to perform, starting with rescuing the captive princess (what else?) but ending with the slightly more ambitious blowing of the horn of fate in some hidden temple.

Heroquest certainly appears to be less of a hack than its predecessor, with everything being there for a reason, if only you can find out what.

The same system of menus and sub menus is used for selection of actions, but the animated graphics have been cleaned up a bit.

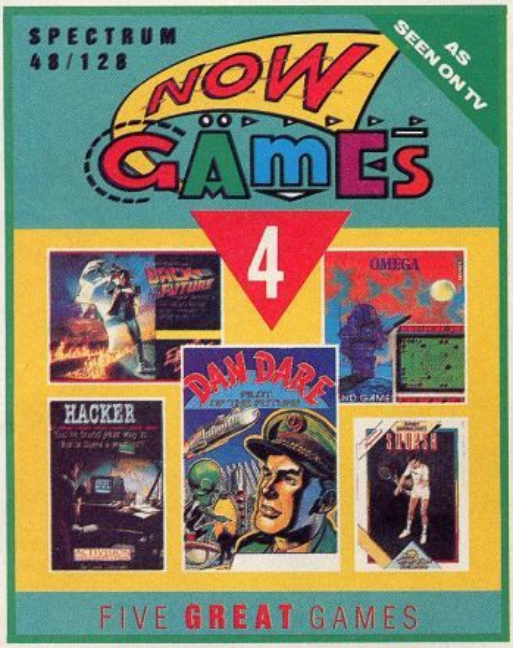
Critics of *S&S* said it was a bit like wandering around a NCP multi-storey, monster bashing . . . so far *Heroquest* looks like being an improvement on that.

Finally, a correction. A few issues back we suggested that *Laurel and Hardy* was called *Big & Little Reindeer* in Scandinavia. Wrong. World Wide Software of Denmark dropped us a line to say they are in fact called Gøg & Gokke, and to drop them a line if we need any further language instruction. How's your Anglo-Saxon, lads?

John Cook

NOW GAMES 4

AS SEEN ON TV



VIRGIN GAMES proudly presents NOW GAMES 4! No dedicated games player can afford to miss this bumper pack. There are 5 full priced hits on one cassette, each chart-topping game works out at a budget game price.

Leading the way is the incredible "DAN DARE – PILOT OF THE FUTURE" from Virgin. There's the hit game of everyone's favourite film "BACK TO THE FUTURE" and a chance to crack systems with "HACKER", both from Activision. "MISSION OMEGA" from Mind Games requires strategic thinking against the clock and Jonah Barrington says "JONAH BARRINGTON'S SQUASH" is so realistic it may even help improve your game. This is a first for Amstrad owners as this has never been released before!

AVAILABLE FROM COMMODORE 64/128, SPECTRUM 48/128 AND AMSTRAD CPC computers, on cassette for £9.95.

Now Games 4 is available from all good software retailers or directly from Virgin Games with this coupon.

You can get exceptional prices on other NOWS in this great series and the more you buy, the more you save!

NOW GAMES Spectrum 48/128 and Commodore 64/128 • Featuring: **Lords of Midnight** (Beyond), **Strangeloop** and **Falcon Patrol II** (Virgin Games), **Pyjamarama** (Mikro-Gen), **Arabian Nights** (Interceptor), **Brian Bloodaxe** (The Edge).

NOW GAMES 2 Spectrum 48/128 and Commodore 64/128 • Featuring: **Airwolf** (Elite), **Chuckie Egg 2** (A'n'F), **Tir Na Nog** (Gargoyle), **Cauldron** (Palace Software), **World Cup** (Artic).

NOW GAMES 3 Spectrum 48/128, Commodore 64/128 and Amstrad CPC • Featuring: **Nick Faldo Plays the Open** (Mind Games), **Sorcery** (Virgin Games), **Codename Mat II** and **View to a Kill** (Domark), **Everyone's a Wally** (Mikro-Gen).

Please circle the software you require. Send this coupon to VIRGIN GAMES LTD, 2/4 VERNON YARD, PORTOBELLO ROAD, LONDON W11 2DX. Please make cheques and postal orders payable to VIRGIN GAMES LTD. Please do not post coins or money.

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NOW GAMES	£3.95	£3.95	
NOW GAMES 2	£5.95	£5.95	
NOW GAMES 3	£7.95	£7.95	£7.95
SET WHICH INCLUDES NOW GAMES, NOW GAMES 2 and NOW GAMES 3	£16.00	£16.00	

ST PRODUCTS DOMINATE ATARI USER SHOW

ALTHOUGH Atari Corporation used the Atari User show, held at the Novotel, London W6 on April 24–26, to launch its entry level and business PC clones (see page 6), it was the potential of the ST range which was largely being exploited by other exhibitors. You had to search quite hard for any sign of 800XLs or 130XEs.

The show also saw the first public display of the Mega STs, 2Mb and 4Mb capacity machines in the series. These machines are aimed at specialist markets, including desktop publishing, and so Atari had its laser printer on show with the Mega STs. For DTP software, two companies, Mirrorsoft and Soft Logik, via Silica Shop, were demonstrating packages.

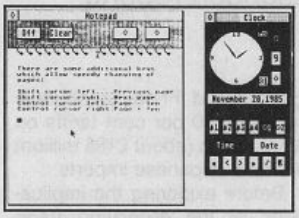
Mirrorsoft had the Postscript laser printer driver on show in tandem with *Fleet Street Publisher*, giving the professional software package a professional looking output.

Soft Logik's *Publishing Partner* comes with a variety of printer drivers, from 9 and 24 pin dot matrix printers to Postscript and HP laserjet printers.

HB Marketing, in addition to showing the Realtizer digitiser, pulled in the crowds with a weather satellite receiving system running on the ST. With the machine connected to a receiving dish, pictures from Meteostat can be displayed on the ST screen and then manipulated by the user.

The company also showed a word processor, Signum, which is designed to cope with outputting all kinds of scientific formulae and notation, as well as offering an extensive selection of fonts.

On the more mainstream side of business software, Precision showed *Superbase Personal*, its new ST database, Computer Concepts, author of *Fast Basic*, showed a word processor with DTP leanings, *Calligrapher*, and also *Back Pack*, a desk accessories package on Rom cartridge. Back Pack comprises a scientific calculator, alarm clock, diary, notepad, address book and Ram disc facility.



Windows from *Back Pack*

Integrated business packages also reared their heads with Execon (financial aids) and Migent's *Ability*, a word processor, spreadsheet, database, etc.

Hisoft demonstrated further products in its language series, including its new ST Basic compiler. The demo versions being run included an amusing image of Jack Tramiel's head and shoulders rotated at fast speed around the screen. We'll see how it matches up against Glentop's GFA Basic Compiler (also at the show) when it is launched in June.

Examples of output using the Postscript driver with *FSP*

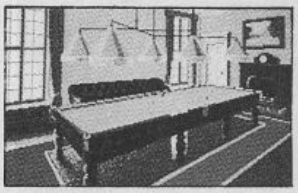
There was also a strong presence of music and graphics utilities. Syndromic Music took over substantial floor space to run continual demonstrations of Midi musical applications from a number of companies, including Dr T, C-Labs, Hybrid Arts, Steinberg and Passport. Music specialist 2-bit systems also exhibited on the ground floor.

On the graphics side, Mirrorsoft had both *Art Director* and *Film Director* up and running, while Electric Software showed *Easy Draw II*. Electric also demonstrated an unusual 3D effect manipulator, complete with special 3D glasses attached to the computer via the expansion port. The company hopes to sell the product to design houses and schools and colleges.

As so many 520STFMs are being sold for home use, the games companies were out in force. Rainbird's *Guild of Thieves* is Anita Sinclair's follow-up to *The Pawn*, and will be available in the next two weeks.

Psygnosis, creator of *Brattacas*, was showing *Barbarian* and *Terrorpods*, two arcade style games with cartoon style graphics.

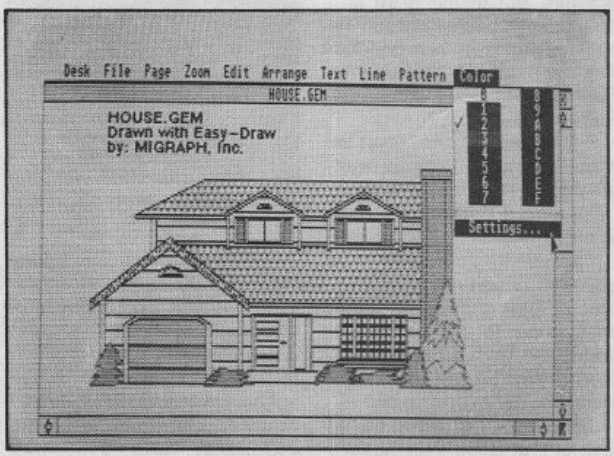
Microdeal, one of the earliest software companies to begin supporting the ST, had its full range on display, including *Gold Runner* with its infectious soundtrack.



Guild of Thieves*, sequel to *The Pawn

Robtek also publically launched its leisure label, calling it Diamond Games. Tynesoft also had demonstrations of the ST leisure range including the appealing *Mousetrap*. Tynesoft's Microvalue series are all very realistically priced, ranging from £12–£15.

Many of the customary show bargains were to be found on the ground floor, which was also where the 8-bit software created its niche. Red Rat Software being among the houses to demonstrate XL games, while Computer House showed a range of desk utilities in Rom for the XL/XES.



***Easy Draw II* from Electric Software**

Trade war threat: the implications for Europe

Whatever the outcome, the threat of a 'trade war' between the USA and Japan has a profound effect on the micro industry, or more specifically, supplies of semi-conductor chips. John Brissenden reports.

THIS week's visit to Washington by Japanese Prime Minister Yashurio Nakasone comes amid the worst US-Japan trade disagreement since World War II.

Although the United States and Japan appeared to be sorting out their difficulties at the time of writing, Europe looks set to suffer as a result of the dispute, whatever the outcome.

On Good Friday, President Reagan announced 100 per cent tariffs on a huge amount of Japanese imported goods, including colour TVs, microcomputers and power tools.

Accusations

Before and since the announcement, accusations have flown thick and fast between Washington and Tokyo.

The dispute covers a wide range of goods, from electric drills to cigarettes, beef and oranges. But at the heart is a fundamental battle between the two nations over semiconductors – or more exactly, Dynamic Random Access Memory (D-Ram) chips.

These are at the heart of every computer, from an eight-bit games machine to a mainframe, and are therefore traded in their millions.

The United States has accused Japan of 'dumping', that is, selling chips at below cost price to manufacturers, first in the United States itself, then in 'third country' markets – Malaysia, Korea and so on.

The current dispute is, on the face of it at least, over Japan's breach of an agreement reached in July last year with the US over 'fair market prices' for chips.

Under this agreement, the Japanese agreed to keep to these prices, which were set by the US Department of Commerce. Selling chips below these prices would break US anti-dumping legislation.

Not just the US

The agreement covered not just the US, but also third country markets. Finally, the agreement was an attempt to open up the domestic Japanese semiconductor market to US firms.

Baker: openly uneasy about the action

No sooner was the agreement signed than the Americans accused the Japanese of breaking it, by dumping chips in South-east Asian third country markets.

The accusations, and counter-claims by the Japanese, have continued since then, until President Reagan's Good Friday announcement of 100 per cent tariffs on $300 million (about £185 million) worth of Japanese imports.

Before exploring the implications of the escalating trade dispute, it is worth examining the strategic importance the United States places on its semiconductor industry.

Apart from its economic importance, the semiconductor industry has another, perhaps more important role as far as the United States is concerned.

These chips, manufactured by major US firms such as Motorola and Texas Instruments, are at the core of many key defence projects – chief among these is the Strategic Defense Initiative, or Star Wars.

The technology for SDI is based around Cray supercomputers which depend, naturally, on US semiconductors.

Critical industry

C Fred Bergsten, director of the Institute for International Economics in Washington, has said: 'Practically everyone in the US agrees that semiconductors is a critical industry and that it would be dangerous, both to the economy and to national security, to lose it."

Bergsten has also written, in an article in *Foreign Affairs* magazine:

"Can the world's largest debtor nation remain the world's leading power?"

So at a time when the US is running a record trade deficit anyway, when arms spending has shot up for a number of years at the expense of industrial investment, and when its defence chiefs are sensitive about the possible collapse of US semiconductor manufacturers – for example Fairchild – it is easy to see the real reasons for the importance the American government is placing on its ongoing difficulties with Japan.

Controversial

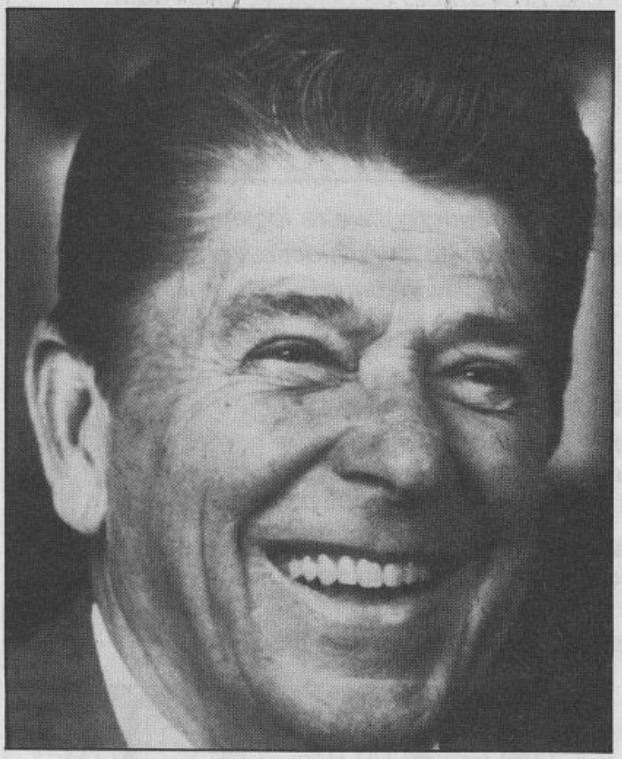
The tariffs announced before Easter, then, have divided opinion in the United States and Japan. While many welcome the move, most assume that the problems of the United States trade deficit with Japan won't go away because of this controversial, but ultimately not very effective measure.

And some American commentators, notably Treasury Secretary James Baker, are openly uneasy about the action, which could easily escalate into worldwide protectionism.

"Before and since the announcement, accusations have flown thick and fast"

A *New York Times* leader column summed up Baker's fears thus:

"Japan responded with



Reagan announced 100% tariffs on Japanese imports

tighter controls on its producers; let everyone hope that it does not retaliate. With economic activity already sluggish in both countries, the last thing the world needs is for them to plunge into trade war. Just the announcement that Mr Reagan would resort to retaliation triggered turmoil in the financial markets; they have not settled down since."

And Jack Tramiel of Atari pointed out last week that it wasn't a case of Japan's doors being closed to US imports anyway. Rather that the Japanese consumer simply prefers to buy Japanese.

Opinion is divided within Japan as well. Sony chairman Akio Morita was typically outspoken when he was reported as saying that Japanese resentment of US actions was based on:

"The feeling is that American . . . criticisms do not arise from legitimate grievances, but more from an increasing tendency to blame Japan for problems of America's own making."

The Ministry of International Trade and Industry (MITI) is the huge government department which deals with Japan's vast overseas trade in electrical goods and computers. MITI minister Hajime Tamura made clear that the official response would be to carry on negotiations and appeal to GATT (General Agreement on Tariffs and Trade), the United Nations body governing trade disputes.

"The implications could be serious for overall European markets in semi-conductor goods"

But he has also claimed that the US tariffs would "cause severe damage" to the world's free trading system.

So for the moment at least, the fight seems to be between Washington and Tokyo. Britain barely has a semiconductor industry to be damaged by dumping from anybody. But the implications could be serious for overall European markets in semiconductor goods.

In fact, the EEC has, up to now, been far ahead of the United States in action against Japanese trade surpluses. All 12 members have taken action, either collectively or individually, over goods from photocopiers to semiconductors themselves.

Strength of the Yen

But a senior figure in the British microcomputer industry, and a member of the board of the British Microcomputer Federation, thinks that the strength of the yen against other currencies is a much stronger determinant of Japanese trading policy than simple aggressive selling.

"The Japanese are puzzled as to the strength of feeling"

MITI minister Hajime Tamura: "severe damage"

"The current dispute is really a whole lot of to-do about not a lot," he said.

"Because of the strength of the yen, the Japanese are in fact hard pushed to hold prices. The Japanese are puzzled as to the strength of feeling on the part of the Americans and Europeans."

He suggested that whatever happened, the BMF for its part would look to represent all companies trading in computers, whether they were based in the US, Japan, or anywhere else.

But it looks as though European consumers may come off worst once again, thanks to being pig in the middle.

NEXT WEEK

The Sinclair QL

A chance for QL users to catch up on all the latest news and software for their machine.

Our eight-page supplement will be looking at alternative keyboards, the QL's graphics capabilities and they are utilised by products such as *ICE* from Eidersoft and

SPECIAL supplement

Rubicon's *Viewpoint CAD*, and this year's 'in' thing, desktop publishing.

Fighting piracy

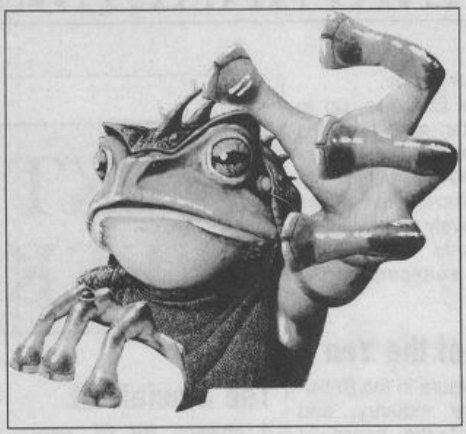
In the last of our features on computers and the law, we talk to the law – more specifically, Detective Inspector Austen of the computer crime unit attached to the fraud squad about his work.

Programming in C

Kenn Garroch continues his series on programming in C, with examples of how to write simple programs in the language.

Compunet update

Graham Edkins brings you the latest developments from the Compunet database for Commodore users.



RANARAMA BY STEVE TURNER

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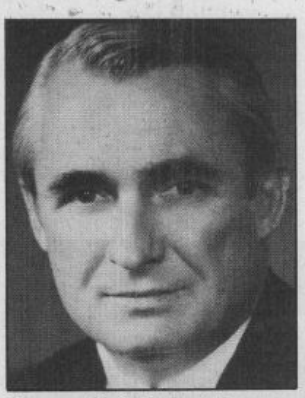
SLUMP IN PROFITS AT IBM LEVEL OUT

IBM's severe profits slump is showing signs of bottoming out. The computer giant's first quarter figures reveal a drop in profits of $232 million (about £142 million) – a 23 per cent fall on the same period in 1986.

But analysts had expected a much more dramatic jump, owing to a very bad fourth quarter in 1986. IBM's annual earnings for 1986 – $4.79 billion (£2.93 billion) – were its worst for four years, and it was the first time since the 1930s that the corporation suffered a drop in earnings in two consecutive years.



Akers: optimistic about the prospects . . . for IBM

So commentators and industry analysts didn't expect IBM's cost-cutting measures to show through until later in the year.

IBM chairman John Akers was understood to be optimistic.

He is reported as saying, "We have yet to fully benefit from our recent product announcements, retirement incentives and other resource-balancing measures. We remain optimistic about the prospects for both the industry and IBM."

These measures, higher sales, and a blitz of product launches centred around the Personal System/2 personal computers and the 9370 minicomputers, combined to boost IBM stock on Wall Street by $3.75 following the announcement.

End of the line for PCW8512?

AMSTRAD could soon be ending production of the PCW8512, the dual drive version of the low-cost word processor-cum-computer.

It appears that sales of the PCW8512 have been dropping off quite sharply following last September's launch of the IBM-compatible PC1512.

Amstrad views the PCW 8256 and 8512 as word processors, and markets them accordingly – the future of the 8256 therefore looks assured.

Amstrad itself wouldn't comment one way or the other, but there have been reports from dealers who have been told by Amstrad distribution representatives that they wouldn't have the 8512 machine much longer.

One Welsh dealer was reported by a trade paper recently as refuting Amstrad claims of poor sales for the 8512. Derek Jones of Wrexham Computer Centre claimed that the 8512 had been selling three times as much as the 8256, and hoped that Amstrad would chop the latter machine instead.

Amstrad has declared its intention to bring out a follow-up machine to the PCWs this year (see *Popular Computing Weekly*, November 20, 1986). But the launch of the PC1512 has added weight to reports that Amstrad intends to streamline its product range in this area, maybe with one machine solely designed for word processing.

Industry sources suggested last week that Amstrad is concentrating on getting the disc-driven Spectrum Plus 3 absolutely right before making any move.

Wordstar for new IBMs

MICROPRO has announced versions of *WordStar Professional Release 4.0* and *WordStar 2000 Plus Release 2.0* for the IBM Personal System/2.

The new versions will support the IBM presentation manager and Microsoft Windows.

In addition, Micropro claims that the Personal System/2 versions will run significantly faster. The company says that *WordStar 2000 Plus* runs 2.3 times faster on the new Model 60, than on the old PC XT.

"IBM has made a quantum price/performance leap and is launching the personal computer industry into its third wave of evolution," said Micropro MD John Speller. "This new hardware will dramatically expand the technological boundaries for software developers."

Prices for the new versions will be the same as other versions – £469 inclusive for *WordStar Professional v4.0*, and £547 inclusive for *WordStar 2000 Plus v2.0*.

Speller: dramatically expand

Major campaign for Origin

MICROPROSE has appointed Ray Evitts as product manager for Origin Systems.

The move follows the deal for UK and European manufacturing, sales and marketing of Origin products which Microprose recently announced (see *Popular Computing Weekly*, March 6).

It is understood that Evitts will shortly be responsible for a major campaign to promote Origin games such as *Autodual* and *Moebius*.

"Although Origin and Microprose will be working side by side, our software is very different. My job is to give Origin its own identity," said Evitts.

Ray Evitts was previously sales manager for Oce Copiers UK.

DIARY DATES

MAY

2–3 May
First Ideal Microcomputer Show
Kensington Exhibition Centre
Details: Software, hardware, peripherals for consumer users
Price: £3 on door, £2 in advance
Organiser: RAMCO International Exhibitions, 01-906 3363

8–10 May
The Electron & BBC Micro User Show
New Horticultural Hall, London
Details: Software, hardware and peripherals for Acorn's micros
Price: £3 adult, £2 children, £1 discount for advance booking
Organiser: Database Exhibitions, 061-456 8835

JUNE

12–14 June
Commodore Show
Novotel, Hammersmith
Details: First public showing of A500 and A2000 Amigas
Price: £3 adult, £2 children
Organiser: Database Exhibitions, 061-456 2991

JULY

10–12 July
Amstrad Computer Show
Alexandra Palace Pavilion, London
Details: Displays and demonstrations of all latest hardware, software and peripherals for Amstrad computers
Price: £3 adult, £2 children, £1 discount for advance booking
Organiser: Database Exhibitions, 061-456 8835

Prices, dates and venues of shows can vary, and you are therefore strongly advised to check with the show organiser before attending. *Popular Computing Weekly* cannot accept responsibility for any alterations to show arrangements made by the organiser.

HAPPY BIRTHDAY!

Popular has reached the grand old age of five – what better excuse for a bit of self-indulgence and a look back at half a decade's worth of events in the home computer industry?

Popular Computing Weekly has joined that exclusive club among micro magazines – we've reached our fifth birthday.

An even more exclusive elite is made up of those of you who can remember the first *Populars*, but for those who don't, we've reprinted overleaf our very first front cover and News Desk.

The Stone Age

Back in 1982 the computer industry was, as you can see from the reprint, very different. The Spectrum, which now seems to have been around since the dawn of time, was still only a 'trade name' within Sinclair Research.

Clive, you will note, had not yet been knighted, and what's all this about a "mechanical keyboard with 'feel', similar to a typewriter"? That, would you believe, was the original "dead flesh" keyboard we were talking about there.

Or maybe it wasn't so different. Commodore was talking about possible new machines (with the accent on "possible" – the Ultimax may have been exhibited, but it never hit the streets), the ZX Microfair was already an institution, and disc drives for Sinclair machines have been coming and going ever since – still in the news today with Amstrad's planned Spectrum Plus 3 version.

Popular, the first weekly mag on the market, was started primarily as a listings magazine – one of the features that has gone from strength to strength and is still around today.

The first *Populars* also included a *Peek and Poke* column, reviews, of course, and the puzzle – all sections with something akin to 'listed building' status these days.

Fashion through the ages: *Popular's* covers undergoing metamorphosis. Amstrad's purchase of Sinclair's rights (top) was a major milestone in the industry

The Bronze Age

November 1982 – out with the colour covers, in with the news. That week, we announced to the world that Commodore had delayed the launch of its Commodore 64 micro, that Melbourne House had just tied up the rights to produce a game based on *The Hobbit* by J R R Tolkien (and four and half years on, there are still people who don't know how to get out of the goblin's dungeon) and Atari had announced a new games machine, the 5200. The letters page was thick with complaints over the late deliveries of the 48K Spectrum ("it is now 16 weeks since my order was acknowledged", wailed Michael Hodgkins). *Plus ça change . . .*

POPULAR Computing WEEKLY

35p 11 November 1982 Vol 1 No 35

This Week | News Desk

New games machine from Atari

Dragon in forced sale by Mettoy

Computer Swap 01-930 3266

WE GIVE YOU MORE—EVERY THURSDAY

The first cover with the news – November 1982

Also in November 1982, another stalwart feature saw the light of day, as *Popular* published its first Ziggurat. In December, we carried our first software charts, with Bug-Byte's *Invaders* at number one.

The Iron Age

Into 1983 and '84, and *Popular* was growing bigger all the time, despite competition from two other weekly magazines, *Personal Computer News* and *Home Computing Weekly*.

The computer market was booming, although still dominated by Sinclair and the Spectrum on the hardware side. Sinclair Research was valued at £140 million, and Clive became Sir Clive in the Queen's Birthday Honours.

Other popular machines were the Dragon and Commodore's 64 was much admired, if considered a little pricey at over £300.

The BBC Micro was going strong too, thanks to the BBC's micros in schools scheme, and plenty of optimistic parents were buying them for the home as well.

Top software houses were Melbourne House, with its best-selling *Hobbit*, Psion, whose titles were published by agreement by Sinclair Research, Quicksilva, Bug Byte and Imagine. The last-named, particularly, had carved out an image for themselves of immense wealth to be gained by young programmers – the legendary (and largely mythical) case of Eugene Evans and his £35,000 salary and company car he couldn't drive being reported in national newspapers.

The Dark Ages

Things changed dramatically in 1984 – and not only because *Popular* moved to glossier paper.

The year started on a high note, with the launch of Sinclair's Quantum Leap, the QL. A business machine for only £400 had captured the imagination of the press, public and software companies alike, but things turned very sour with the long, long delivery delays and the first models being delivered with half the innards on an Eprom sticking out of the back.

Popular kept a record of the time taken to deliver our own QL – it finally turned up after 16 weeks.

We also brought the first news of Amstrad's entry into the computing field with the CPC464. Not that we had any idea of Amstrad's impending domination.

Then came the crashes: Dragon Data, Rabbit Software and, most spectacularly of all, Imagine.

The sceptics came out in force when a new company called Mastertronic announced it was going to do the unthinkable – sell computer games for £1.99. "They'll never make any money". "The programmers certainly won't make any money". "All the games must be rubbish".

And so on. Meanwhile, Mastertronics got on with the job, and sold zillions.

The Renaissance

Colour came back to the front cover of *Popular* at the beginning of 1985, and has never left it since.

Things sorted themselves out (sometimes rather brutally) in 1985 and '86. Acorn led the way by having to be rescued twice by Italian manufacturer Olivetti, and then mighty Sinclair turned gratefully to Robert Maxwell's offer, before the newspaper publisher pulled out.

Only Commodore, with its C64 going great guns thanks to more sensible pricing and the continued import of high quality games from the US, seemed to be unscathed, but even it had its fair share of cash flow problems and reported losses running into millions in late 1985.

From today's point of view, Jack Tramiel's takeover of Atari, and the company's subsequent rebirth with the ST machines, was probably the most significant move, and led the way for today's growth of 16-bit machines into the home.

Now, the distinction between the home and small business market is more blurred than ever, PC clones, PCWs, STs, Amigas, all used happily in either capacity.

We'll carry on reporting developments and innovations as they happen – hopefully, before they happen. When we come to the end of the next five years, I'll bet you anything you like the industry will be virtually unrecognisable from the market today.

Datelines

Computer milestones as reported by *Popular Computing Weekly*.

1982

April 23 First edition of *Popular* published
The ZX82, or Sinclair Spectrum, announced
May 27 The NewBrain micro launched by Grundy Business Systems
July 8 Mettoy launches the Dragon 32 computer
July 22 Tangerine announces the Oric 1 micro
August 19 Clive Sinclair offers a £10 voucher to those still waiting for their Spectrum to be delivered
September 16 Camputers announces the advent of the Lynx
September 23 Prestel releases plans for a software downloading scheme, to be called Micronet 800
November 11 Melbourne House gains rights to produce a computer game based on Tolkien's *Hobbit*
December 16 The Sinclair Spectrum goes retail – sold over the counter at W H Smith

1983

January 6 Sinclair announces that a version of the Spectrum will be sold, by Timex, in the US
January 27 Sinclair sells 10 per cent of its equity to raise money for its electric car project. The £12.7 million realised means that Sinclair Research is valued at £135.9 million
February 10 Mattel announces a new computer system – the Aquarius
March 3 Micronet 800 officially launched
March 17 Commodore plumps for Corby as the site for its new micro assembly plant. According to Commodore, it will employ over 300 people and supply Commodore home computers to the whole of Europe
April 7 Jeff Minter's GridRunner goes to number one in the US
May 12 Memotech shows a "new low-cost" micro at the London Computer Fair
June 16 Clive Sinclair is knighted in the Queen's Birthday Honours List
July 21 Sinclair claims its new Microdrive device will be ready in September
August 11 New company Elan is set up to develop the Elan computer (watch this story – it runs and runs)
August 25 National newspaper *The Daily Mirror* unveils plans to publish software programs
Grundy, manufacturer of the NewBrain, goes into liquidation
September 1 The long-awaited Electron is finally launched
September 22 Elan delcares that its two micros, the Enterprise 64 and 128, will be in the shops by April 1984
Sir Clive unveils his flat screen TV
October 20 Acorn joins the Unlisted Securities Market (USM)

continued on page 18 ▶

POPULAR Computing WEEKLY

23 APRIL 1982 Vol.1 No.1

30p

Space Amaze on ZX 81

Six pages of ZX 81, VIC, and BBC programs

Cassettes tested
Micro music

and much, much more

Win a ZX 81 Printer

News

The ZX82 is near!

CLIVE SINCLAIR is on the brink of launching his new computer. The machine will probably be sold under the trade name 'Spectrum', but for the moment is code-named 'zx82' within Sinclair Research.

The price of the ZX82 is expected to be about £170 — considerably higher than the ZX81 (£69.95) or the ZX80 (£99). But its features should prove well worth the money, and will make it a serious contender for the Number 1 computer for home users.

The ZX82 is a significant step forward from the ZX81. It will offer colour graphics, and have a mechanical keyboard with 'feel', similar to a typewriter. The 'touchpad' keyboard of the ZX81 proved a cause for complaint for many users, but the new design should put an end to these dissatisfactions.

The memory of the ZX82 will be capable of expansion to 32K — seen by many users a necessary, rather than merely desirable.

Compatibility with earlier Sinclair machines has yet to be confirmed.

Third ZX Microfair promises to be biggest yet, says organiser

The third ZX Microfair will be held at Westminster Central Hall on Friday April 30 and Saturday May 1.

More than 70 suppliers of hardware and software for the Sinclair ZX computers have taken stands at the show, according to the organiser, Mike Johnston.

'We're having great difficulty in squeezing in everybody who wants to show their wares in,' said Johnston. 'But we will be making more space available than at previous Microfairs, so visitors will be able to see a very wide range of offerings.

'About 40% of the exhibitors will be showing hardware products including a number of high quality RAM packs. Storkrose will be demonstrating an I/O device which allows up to four cassettes and a printer to be attached to the ZX81, while Ab Pandall will show a mini keyboard to fit over the XZ81.'

Mike Johnson: 'more space'

Admission will be 60p for adults and 40p for children, and the exhibition will be open from 12.30 pm to 8.30 pm on the first day and from 10.00 am to 6.00 pm on the second.

For those who wish to make absolutely sure that they will get in, advance tickets are available for the Friday, price £1 for adults and 50p for children. You can obtain these from Mike Johnston, Organiser: ZX Microfair, 71 Park Lane, London N18 0HG.

Johnston is also organising a ZX Microfair to be held in Manchester on Saturday May 29 and Sunday May 30 at the New Century Hall in Corporation Street.

Times of opening are 10.00 am to 8.00 pm on the first day and 10.00 am to 5.00 pm on the second.

Monolith plans a £200 disc drive for Sinclairs

At last you'll able to use disc memory with the ZX81 when Monolith launches a floppy disc unit for the Sinclair machine 'probably in June'

The units will cost about £200 each, according to Monolith director Rod Hallett. He believes they will prove attractive to hobbyists and small business users such as shopkeepers who could use the drives for applications like stock control and accounting.

The drives are at present undergoing final tests, but Hallett is confident that they will be completely bug-free by the time of the launch.

'We are already taking orders on a deposit basis, but as yet we haven't decided whether to make the devices available through dealers,' said Hallett. 'But because we're selling on fairly tight profit margins to keep the price down, we're likely to plump for direct mail sales only.'

How Sinclair will react to the new machines is still unclear. 'Sinclair does not intend to recommend any particular disc drive,' said a spokesman for the company. 'We are interested in selling a drive under our own brand name, either making it outselves or buying in from another supplier. We've had a number of discussions about this with companies including Rodime, but as yet have come to no decision about these.'

Commodore is having a baby

Rumours have been filtering through the press lately with regard to new machines coming out of the Commodore factories. Lets take a look at the newest, and smallest, of these, the Ultimax.

Ultimax has a US selling price of $149.95, so we can expect a UK price of something like £99. Delivery dates are not quite so clear; some dealers are quoting midsummer, but from past experience we shouldn't expect any great quantities until somewhere nearer Christmas.

Built-in memory will be 2Kor 2.5K (no-one seems quite sure at the moment), with an additional 8K expansion cartridge becoming available at some point. However, as only one cartridge can be plugged in at a time, and Basic comes on — you guessed it — a plug-in cartridge, memory expansion seems a lost cause.

All this is still subject to change, so things may be different when the machine appears in large quantities.

See us at the Computer Fair

The first of the major home computer exhibitions this year is the Computer Fair, running at London's Earls Court on April 23-25.

Popular Computing Weekly will be exhibiting at the fair on stands 309 and 410.

The Computer Fair is an ambitious attempt by IPC, the large publishing company, to break into the market for home computer exhibitions. To date this has been dominated by the Personal Computer World Show, held in the autumn.

One of the key attractions of the Computer Fair is the ZX Village in which most of the companies supplying software and hardware add-ons for the ZX81 will be exhibiting.

◀ continued from page 15

November 3 Texas Instruments withdraws from the home computer market
Jupiter Cantab, manufacturer of the Jupiter Ace, goes into receivership
November 17 Japanese plans for an MSX standard for micros are announced

1984

January 5 It is revealed that Amstrad Consumer Electronics is planning to enter the computer market with a machine with a built-in monitor and cassette deck

Imagine set the style for sophisticated inlays – Arcade has one of its most successful series

January 19 Commodore's founder and president, Jack Tramiel, resigns from the company
January 19 Sinclair launches its Quantum Leap, the QL computer
February 2 Apple officially announces its new Macintosh computer
February 23 The QL micro suffers from delayed deliveries
Elan Computers changes its name to Flan, following the discovery that another company had already registered the name Elan
March 1 Timex withdraws from the US market
March 15 *Jet Set Willy* announced
March 22 Flan Computers changes its name to Enterprise Computers
April 19 Alan Sugar formally launches the Amstrad computer, the CPC464
April 26 Tatung announces the Einstein computer
The mystery of the non-appearing QL is revealed – SuperBasic and QDOS won't fit into the 32K Rom, so first machines delivered will come complete with an Eprom plugged into the back
June 7 Dragon Data goes into receivership
Argus Specialist Press buys out veteran software company Quicksilva
June 14 Commodore launches the C16 and Plus/4
Camputers, manufacturers of the Lynx micros, goes into liquidation
July 5 Flamboyant software house Imagine crashes
Psion announces the Organiser pocket computer
July 12 Jack Tramiel buys Atari from Warner Communications for $240 million
July 19 Dragon Data is bought by Eurohard SA of Spain
August 23 Commodore database Compunet is set up
US Gold is founded by Ocean and distributor Centresoft to publish US games in the UK under licence
September 6 Commodore announces that it is negotiating to buy a company called Amiga, in order to sell Lorraine, its 68000-based micro
September 20 Acorn launches a range of micros called the Acorn Business Machines
September 27 Seven Japanese manufacturers (Canon, Hitachi, JVC, Mitsubishi, Sanyo, Sony and Toshiba) launch the first MSX micros in Europe
Jack Tramiel announces that Atari will produce non-IBM compatible 16- and 32-bit computers in early 1985
Ghostbusters is previewed at the *Personal Computer World* show
October 18 The Spectrum Plus arrives in the shops
Ocean buys up the name Imagine to use as an arcade games label
November 1 ICL releases details of the One Per Desk, a machine based around Sinclair's QL technology
November 22 Ultimate launches *Knight Lore*
November 29 Sinclair confirms that it is developing a portable micro, "to be launched in 1985"

1985

January 3 Infocom publishes an adventure game based on *The Hitchhikers Guide to the Galaxy*
January 10 Two ST models shown by Atari for the first time at CES in Las Vegas
Commodore exhibits its new machine, the C128
The Enterprise 64 micro finally goes on sale
January 17 Sinclair launches the C5 electric vehicle
January 24 Commodore uses the *Which Computer?* show for a first showing of its IBM PC compatible micro
January 31 Quicksilva announces plans for a charity compilation tape, Soft Aid. Proceeds to go to the Band Aid Trust
February 7 Oric crashes
February 14 Acorn's USM shares are suspended
February 28 Olivetti rescues Acorn, taking a 49 per cent stake in the company
April 4 Robert Schifreen and Steve Gold arrested on charges relating to 'hacking' into the Prestel database
April 25 Amstrad launches the CPC664
May 2 Acorn's BBC B+ reaches the shops
May 16 First hints that Sinclair plans a 128K version of the Spectrum appear
May 31 *Way of the Exploding Fist* launched by Melbourne House
Commodore begins packaging the C64 together with tape deck, joystick and software
June 6 Sinclair announces it is looking for £10–£15 million finance. Sir Clive steps down as chief executive
June 13 Amstrad launches the CPC6128 – in the US!
Commodore sets a date for the first showing of the Amiga
The Commodore 128 is exhibited at the Commodore show
June 20 Publishing magnate Robert Maxwell declares he will take over Sinclair Research
June 27 Acorn's shares are suspended for a second time
July 25 The Commodore 128 machine is launched in the UK
August 1 Commodore launches the Amiga A1000 in the US
August 15 Robert Maxwell pulls out of his bid for Sinclair Research
The Amstrad CPC6128 becomes available in UK shops
August 22 Amstrad launches the PCW8256
Olivetti increases its stake in Acorn to 79.8 per cent. Shares trade again
September 12 Atari shows the first of its ST machines in the UK at the *PCW* show.
September 26 The Spectrum 128 is launched – in Spain!
October 10 Digital Research alters the appearance of the screens on its new operating system, *Gem*, after complaints of copyright violation by Apple
October 17 British Telecom buys Beyond Software
October 24 The receiver is called in at Sinclair Vehicles
November 14 British Telecom sets up a new software label, Rainbird
December 5 First news of Amstrad's plans to tackle the IBM PC compatible market

1986

January 9 Acorn announces details of its Master System series
Commodore closes down its plant at Corby
January 23 Commodore launches the Commodore 128D at the *Which Computer?* show
Rainbird announces it will be releasing *The Pawn*
February 6 Commodore hits financial trouble after a string of poor results
February 13 The Spectrum 128 is launched in the UK
April 10 Amstrad buys the rights to Sinclair's computers and name for £5 million
May 1 Schifreen and Gold found guilty in 'hacking' trial
May 15 The Amiga computer is finally revealed to the British public
June 12 Commodore launches the new-look C64, the C64C, in the US
June 26 Amstrad attempts to block plans for third party companies to produce their own QL machines
July 3 Enterprise Computers goes into receivership
September 4 Amstrad unveils its PC compatible machines, the PC1512 range
September 11 The Spectrum Plus 2 is launched at the *PCW* show
Also at the show, Atari previews its Mega STs
October 23 The first of the 'knocking' stories about the Amstrad PCs appears. There are worries that the machine may overheat; Amstrad counters hotly; agrees to install fan in the machines; advises users not to bother with it
October 30 Commodore cuts the price of the Amiga
November 6 Beyond shows preview screens of its *Star Trek* game
Amstrad raises the price of its PC1512s
November 20 Commodore plans new Amigas – the A500 and A2000
December 18 Microprose and US Gold part company
Atari's 520STFM becomes available

1987

January 15 Atari launches a low-cost PC clone at CES; Amstrad shows its PC1512s to the US market at the same time
February 12 Mastertronic takes over Melbourne House
February 18 Sir Clive Sinclair launches the Z88 portable micro at *Which Computer?* show
March 13 Commodore surprises everyone with a low-cost PC clone at the Hannover Fair . . .
. . . and launches the A500 and A2000 in the UK
April 10 IBM announces its PS system micros to follow on from its PC standard, set five years previously

A star is re-born

Wordstar has long been recognised as one of the most widely used and best known word processing packages. Here, Peter Worlock reviews its latest incarnation, Version 4.

When it comes to word processing on microcomputers, *Wordstar* has long been the software package against which all others are judged.

This is not due to outstanding merit on the part of of *Wordstar*. When other packages were judged, they were often found to be much better.

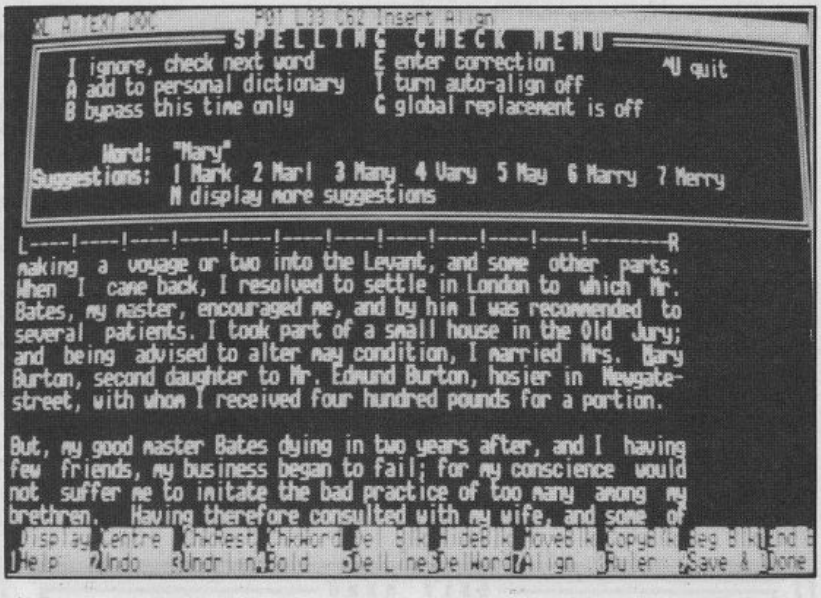
Wordstar was never the fastest of programs, and as MicroPro bolted on extra features it slowed down further. Moreover, the early versions had some very cranky features such as the choice of control keys, and the fact that *Wordstar* would happily try and save a file to a protected disc and then crash out into the operating system when it failed (losing your work in the process).

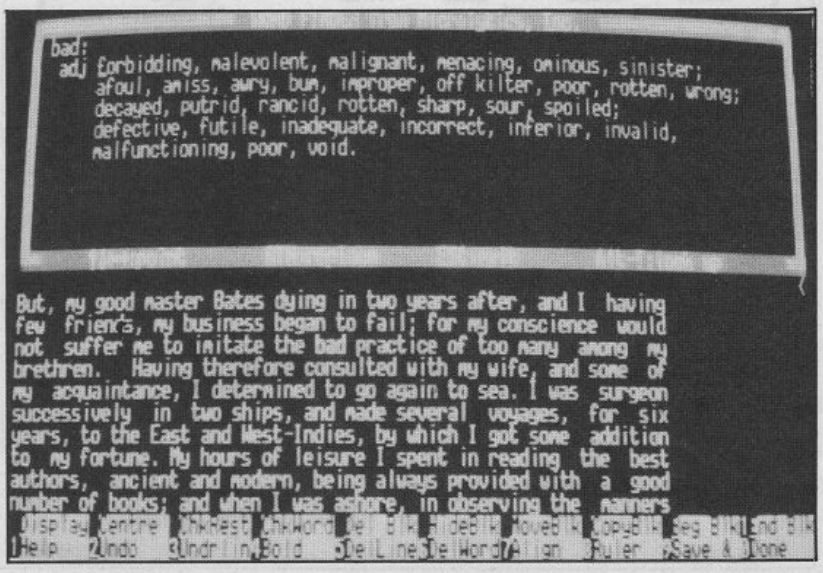
Despite these problems, *Wordstar* quickly established itself as the "standard" word processing software, demonstrating the truth of the old adage, "Nothing succeeds like success".

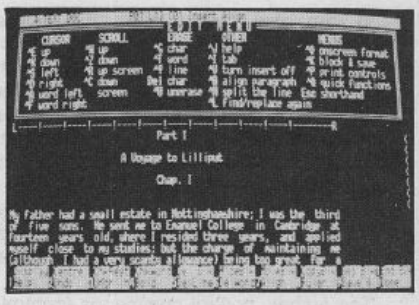
Wordstar soon reached a kind of "event horizon" whereby it sold more and more copies because so many copies had already been sold.

If you wanted to exchange files with a friend, chances are the friend had a copy of *Wordstar*. If you had to write on a strange computer, chances are the computer was running *Wordstar*. Even if you didn't particularly like *Wordstar* (and I, for one, didn't) there were very good reasons for getting a copy.

Now, after many incarnations (*Wordstar CP/M*, *Pocket Wordstar*, *Wordstar 2000*) we have arrived at *Wordstar Professional Version 4* running on IBM PCs and other MS-DOS compatibles.







Wordstar's spelling checker (above left) displays its own menu and commands. All functions are accessed with a single keystroke. *Word Finder*, the thesaurus (left), uses a similar menu, here displaying alternatives for "bad". (Above) the familiar *Wordstar* screen with menu. Old-time users will notice some new additions such as Esc for shorthand commands.

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◀ continued from page 19

Features

First, and perhaps most important, is the fact that this latest version is the genuine *Wordstar*: it looks like *Wordstar*, acts like *Wordstar* and will read and write real *Wordstar* files (unlike *Wordstar 2000*).

But more obvious than this is the size of the package. In a box the size of several bibles, the program comprises no fewer than six discs, a large, comprehensive manual, keyboard overlay cards, quick reference cards and a subsidiary manual for the *Word Finder* sub-program.

Before you can begin using *Wordstar* you must install the beast on your system. This is not as daunting as it appears – on our Amstrad 1512 it took about 15 minutes.

First back up the main program, spelling dictionary and thesaurus discs. Next install *Wordstar* for your system (for monitor, printer and disc drives). Then install *Word Finder*. Finally boot up *Wordstar* from your working copy, and away you go.

If all this sounds off-putting to first-time or inexperienced computer users, it shouldn't. Micropro has bent over backwards to make the process as painless as possible, and all stages are clearly explained in the excellent documentation.

There's even a "cute" tutorial disc which introduces computers, keyboards and *Wordstar* with the help of a few simple games.

Version 4 of *Wordstar* itself is a revelation. It is very fast, and this despite the fact that Micropro claims to have made more than 120 improvements to the program.

Some of these are minor but useful – more and better delete options and cursor movements, for instance. But many are substantial, including the ability to create and edit multiple columns in your documents, thus making it very easy to create tables.

Rules and boxes

You can also create rules and boxes using graphics characters, and there's a 14-function maths calculator and block math operations which are incredibly useful for jobs that need quick calculation but either aren't suitable for a spreadsheet, or which don't justify leaving the word processor and loading a separate spreadsheet program.

Headers and footers can now occupy more than one line, but surprisingly there's still no facility for using separate headers and footers on left- and right-hand pages.

The archaic control commands (control-KD to save the current file, for example) remain, but many now work in tandem with the dedicated cursor and function keys which can be further customised to suit your own preferences.

Personal customisation is one of the major features of *Wordstar* and *Version 4* takes this further. You can configure the system to work in more or less just the way you want it.

Perhaps the most impressive features of the new package are things that might normally be considered as programs in their own right. For example, mail merge is a built-in standard feature, and surprisingly easy to use.

A spelling checker is built-in and always available. You can either check a word before typing it, or check an entire document. If any word is not found you can correct it, accept it and add it to your own dictionary, accept it without adding it to your dictionary, or accept one of the suggested alternatives that *Wordstar* offers ("nipples" instead of "Naples"?).

The thesaurus

Even more fun is *Word Finder*. This is a thesaurus/synonym finder and really is a program in its own right, but one that has been configured to work with *Wordstar*.

You can run *Word Finder* before loading *Wordstar* and *Word Finder* then co-resides in memory. Any time you need a synonym, simply place the cursor on the word in question, press Alt-1 (or whichever combination you prefer) and you are offered a collection of alternatives.

You can get alternatives to the alternatives by repeating the process. If *Word Finder* can't find the exact word it will try a close match – sometimes with odd results. For example, for "commander" (noun) it acted on "command" (verb).

If you find a word you like, just place the cursor on it, press RETURN, and the substitution is made. The whole process is very flexible and fast.

Oh, and by the way, *Wordstar* no longer kills itself – and your file – if you try to save it to a protected disc. Indeed, it is now so security-conscious that it will not allow you to edit a file loaded from a protected disc, and the menu itself carries the legend "Protected Menu".

Conclusions

Wordstar Professional Version 4 is no longer merely a word processor. It is a complete system for creating, editing and manipulating words.

Offhand, I can't think of another package that comes close. Yes, there are packages that offer facilities missing from *Wordstar*. Facilities like multiple fonts, the ability to merge graphics and text, and so on.

Some of the less dramatic omissions are more worrying. I'd really like to see left- and right-hand headers and footers, for example. And the multiple column features don't really go far enough.

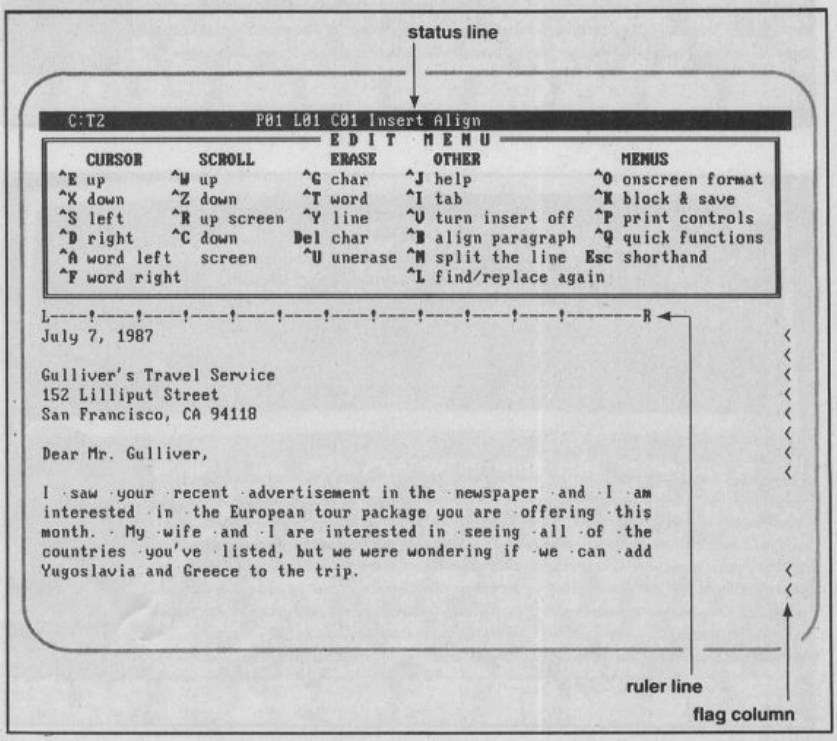
But when a program offers you so much, it seems churlish to quibble about failings like these.

At the price, *Wordstar* is too expensive, and too powerful in any case, for casual users of word processing software.

But the good news is that Micropro is offering an attractive upgrade for existing owners of earlier versions of *Wordstar*. (Note "owners".)

If you have a copy of *Wordstar*, *Wordstar Professional* or *NewWord 3*, you can get a copy of *Version 4* for a paltry £99 until the end of July.

If you are a newcomer to the joys of *Wordstar*, the choice is more difficult. At £399, it's a product only for serious users. Unless you fall into that category there are many more packages that represent better value for money.



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Beware the mouse

Turn your PCW machine into a Wimp, with the AMX Mouse package. John Cook finds the mouse and associated software providing windows and icons easy to use

Wimps. Two years ago in the home sector, the mention of a Wimp was always associated with a particular breed of programmer – while a Wimp environment inevitably conjured up images of an untidy bedroom.

Two years on things have changed. It's difficult to find a micro under £500 which doesn't offer a Wimp (Windows, Icons, Menus, Pointers) environment, at least as an optional extra and it's easy to see why. Wimps are wonderful.

The need for Wimps arose as the computer literacy of the average computer user fell. Manipulating the intricacies of an operating system might be OK for a professional, but for a computer novice, it's a minefield designed to provoke a severe case of technofear at the touch of a button. "There must be a better way," was the plaintive cry of thousands as they struggled with their user manuals – and as hardware limitations began to dwindle, there was.

Smalltalk

The fundamental Wimp concept was conceived by Xerox, with the Smalltalk project, but first brought to the marketplace by Apple with expensive Macintosh predecessor, the Lisa.

The idea was to try and make the operation of the system as natural as possible and to relate concepts such as data files, programs and documents to naive users by representing them pictorially – icons.

The operation of the system would be structured via a series of menus which would appear as drop down windows when summoned, and item selection and manipulation would all be carried via an on-screen pointer, controlled by a 'mouse' – basically an upturned track ball, with its movements across a surface mirrored by the pointer.

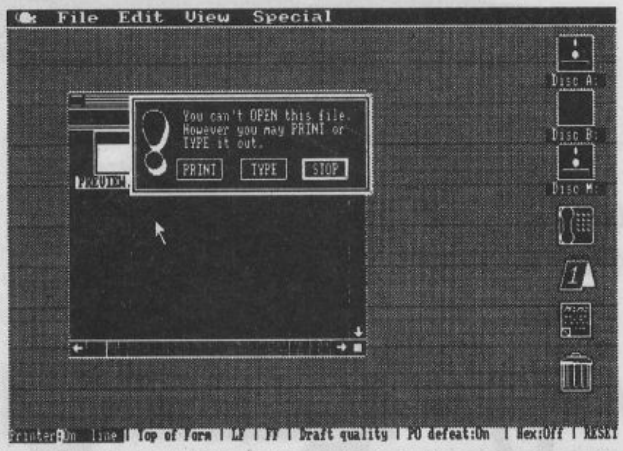
Formerly its use had been confined to CAD and drawing applications, but mice were a vital part of the Wimp philosophy, freeing the user from the limitations of the keyboard.

You no longer had to type to use a computer. You moved the pointer across the screen with the mouse. You no longer had to get to grips with complex operating system syntax. To select an item, you pointed to it and pressed a button on the mouse.

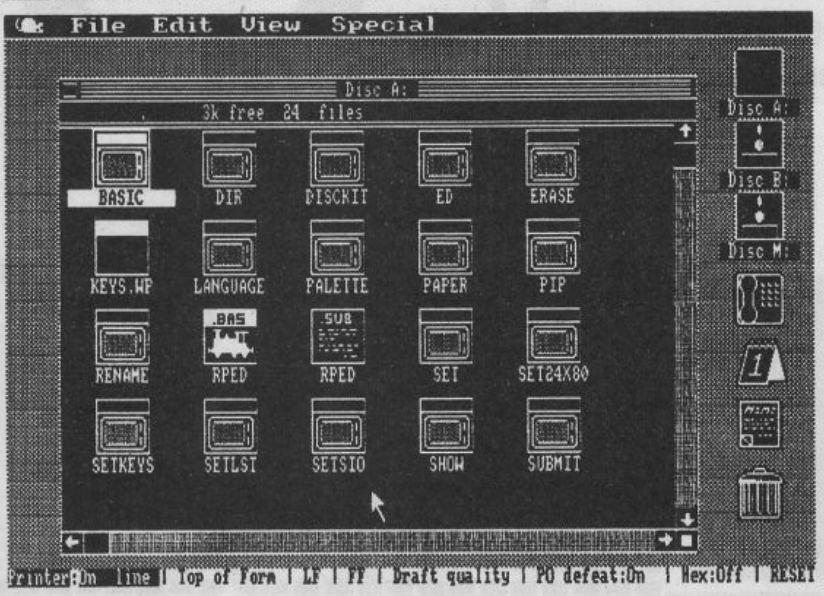
To get a directory of a disc, you pointed to a picture of the disc, and pressed twice. Its contents would appear as pictures in a window.

To copy a file from one disc to another, you selected it, then moved its outline with the mouse, over to the Disc B icon. Simple.

After appearing on the Lisa, then the Macintosh, Wimp systems started to take off, with the development of Gem (Graphic Environment Manager) by Digital Research . . . which itself tussled with Apple over alleged similarities . . . less successfully, Microsoft's Windows and recently even a system for the Commodore 64, Geos. And now, low and behold, a Wimp system for the Amstrad PCW from advanced Memory Systems, with the AMX Mouse.



The AMX mouse package: offering the Windows, Icons, Menus and Pointers environment for your PCW machine.



AMX mouse

Advanced Memory Systems has been producing respectable hardware/software mouse based packages for years – and this one has got to rate as one of the best. But exactly what do you get for your £79.95?

First of all, the stand-alone PCW doesn't come with a mouse . . . so AMS supplies you with one, together with an interface that fits on to the expansion port of the computer. The interface itself has a through-bus that allows piggy-backing of other interfaces – like the RS232 interface for instance.

It is the mouse, if anything, that provides the only major disappointment of the package. It is very light, and has a plasticky, uncertain feel as you manoeuvre it across the desk top. If anywhere, this is where the costs have been cut. It has three buttons – although only two are used by the present software, the left for selection, the right to cancel.

The Kempston PCW mouse (the only

other on the market at £89.95) is a considerably better piece of kit per se, but when you come down to the software supplied, the AMX mouse comes out way on top.

With Kempston's package, you get an adapted version of the tried and tested *Write Hand Man* (a concurrent desk accessory package), and a RSX patch that allows you to use the mouse in the place of cursor input. With the AMX mouse, you get a full blown Wimp environment, together with a full range of neat desktop accessories, which run concurrent with the system, but not while another program is running under the system.

Wimp environment

Having connected the interface and the mouse, you load in the driving software, supplied on a single disc. Initially, you must load CP/M first and type DESK, but there is a simple Startup option that automatically creates autoboot discs for you.

When the driving software loads up, you are presented with a new screen layout, the Wimp environment. Gone is the dreaded A> prompt – replaced by seven icons running down the right hand vertical of the display, a menu bar along the top, a window in the centre displaying the contents of the disc, again as icons, and a pointer.

Users familiar with the Wimp environment will find no surprises – and new users should discover that the new techniques are simple to pick up.

Windows can be moved by clicking on the title bar along the top and moving the mouse while holding the left hand mouse button down (a mouse technique known as dragging). You find that an outline of the window moves with it. Release the button when you reach your new position, and the window is redrawn, intact.

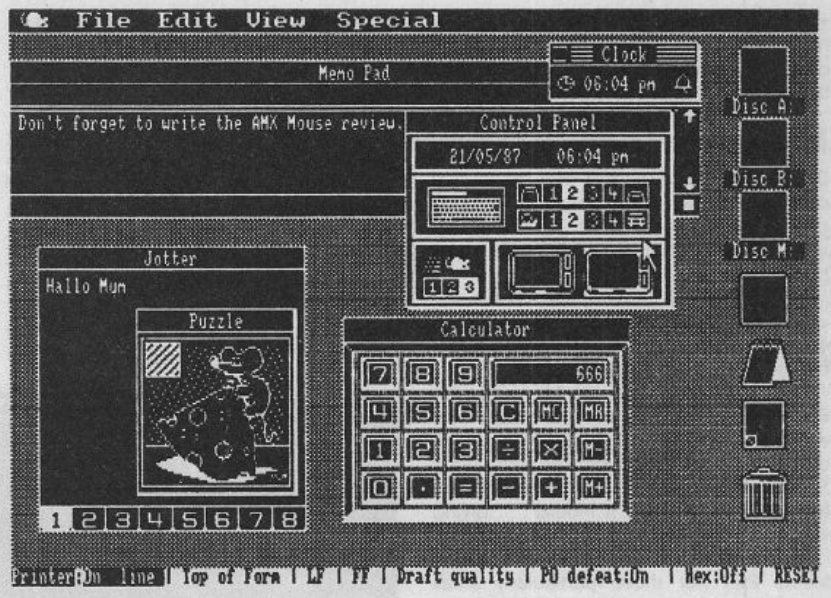
Windows are closed by clicking on the box on the top left border, resized by dragging on the box, bottom right and if necessary, the contents of windows can be scrolled left/right, up/down by clicking on the appropriate scroll bar.

Items on the selected disc are displayed in the window as labelled icons. The type of icon displayed for any file will depend on the filename extension. Those ending .COM. (programs) will be represented by a picture of the PCW. Those with .TXT will look like a letter. There is some humour here too – those with .BAK are show by a safe!

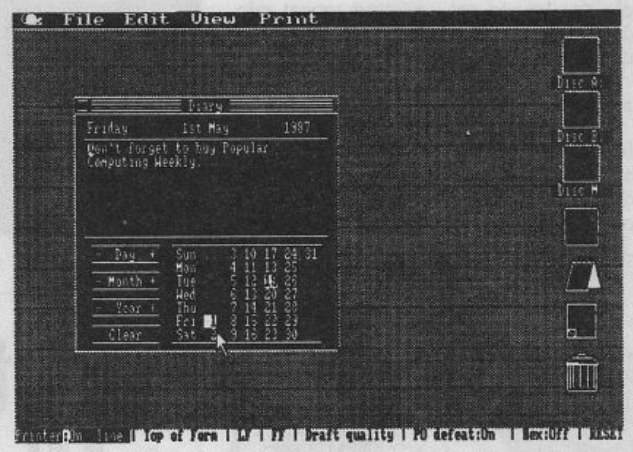
The seven icons permanently on the right of the screen represent the three disc drives, the three main desk accessories, Desk Diary, Memo Pad and Address Book and a Trash Can for deleting files.

Clicking on a disc icon will give a directory of its contents, displayed in a window. Clicking on an accessory icon will activate that function, and all three perform well. The Trash Can is where you drag anything that you want erased . . . and foolishly, this is all too easily done.

Any file displayed in a window can be dragged over to the Can and erased by just releasing the button. Erased permanently. A simple 'Are you sure?' dialling box would



Options such as the diary, notebook and telephone directory add to the convenience and usefulness of the package.



continued on page 24 ▶

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have saved most of the many minor tragedies that are certain to occur in the future because of its absence.

Menu Bar

Simple disc management can be carried out by just clicking and dragging – but for getting more information about or renaming a file, the File option on the menu Bar must be selected.

When selected, a menu drops down and you can highlight whatever option is needed . . . some of which duplicate action that can be carried out via mouse only.

The other options on the Menu Bar are Edit (with which you can manipulate text within the system), View (allowing you to display files not as icons, but with text), Special (for creating startup discs and exiting to CP/M) and a mouse . . . giving you access to five more desk accessories.

Jotter is a much cut-down version of Memo Pad (for those particularly small thoughts perhaps), while Control Panel enables you to set keyboard repeat rate and delay, a mouse speed and a desk top colour . . . a choice of inverse or non-inverse, as well initialising the system clock and date.

Naturally, these have to be reset each time the machine is switched off. The array of goodies is finished off with an alarm clock, a calculator and a sliding block puzzle – for the particularly overstressed executive. Once called up, all these can be manipulated and used via mouse.

Conclusion

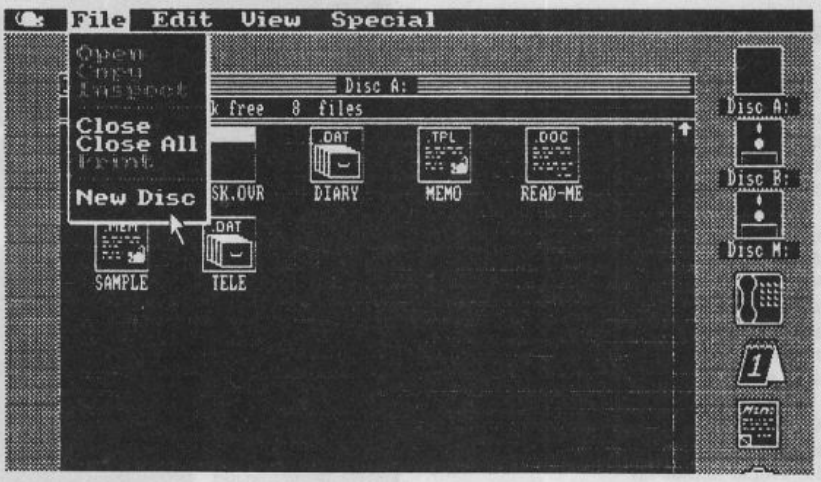
Our version 1.00 performed well, without crashing once throughout testing . . . and how many 1.00s can you say that about? Overall it is designed well and we found it easy to use. Those familiar with Wimp systems will be well satisfied; those not should pick up the concepts quickly and be delighted with the results.

The only reservation must be about the lastability of the mouse supplied with the system, with lacked responsiveness and felt insubstantial.

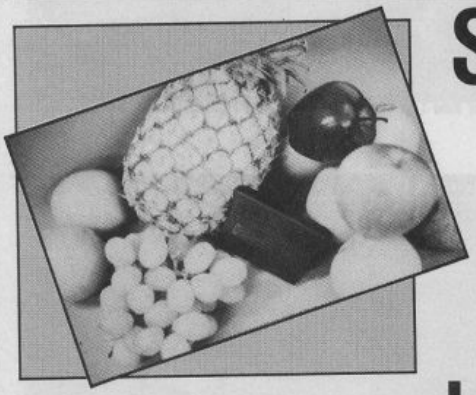
If you want a mouse only – go and grab Kempston's, but the AMX software is superior in almost every department and further support in the shape of paint and publishing AMS products are promised for later this year, together with a GSX device driver.

On balance, I'd go for the AMX mouse.

Product *AMX Mouse* **Price** £79.95 **Supplier** Advanced Memory Systems, 166–70 Wilderspool Causeway, Warrington WA4 6QA, (0925) 413501/2/3.



SPECIAL OFFER



Spectrum Micro Source (for less...)

Hands up those who remember the Currah Micro Source.

Of course you do, you know, that Rom cartridge for the Spectrum comprising a Z80 macro assembler, 16-bit integer Forth and debugging toolkit.

The product has been sold by a number of companies, but now it's fallen into the generous hands of Simmons Electronics.

Generous, because Simmons has teamed up with *Popular Computing Weekly* to offer you this handy utility Rom at a very special price.

Simmons Electronics is selling Micro Source at £19.95. For all versions of Spectrum. But if you collect the token below and the second token in next week's *Popular*, you can get £5 off the Micro Source cartridge.

Send off the tokens with just £14.95 to Simmons Electronics, The Garden House, Old Stables, Tanybwich, Rhydyfelin, Aberystwyth, Dyfed, SY23 4PY.

Please send me a Micro Source for my 48K Spectrum – I enclose a cheque/postal order for £14.95 (made payable to Simmons Electronics) together with two Special Offer tokens from *Popular Computing Weekly*.

Name.....

Address .....

.....

.....

Please allow 28 days for delivery. Offer closes May 21. Coupons, tokens and remittance to be sent to Simmons Electronics, The Garden House, Old Stables, Tanybwich, Rhydyfedelin, Aberystwyth, Dyfed.

Popular/Simmons Micro Source special offer

Token No. 1

What's so special about the Mac, the Atari St, The Amiga, Windows and Gem?

It's no surprise that nearly all new 16 bit 'state of the art' micros now come with a Mouse and Wimp environment (Windows, Icons, Menus and Pointers) as standard.

With the AMSTRAD PCW you already own one of the classic micros and by simply adding the AMX Mouse and Desktop you can achieve the same ease of use, freedom and versatility of much more sophisticated computers.

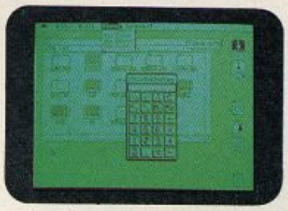
The AMX Mouse and compatible software – it's what you and your AMSTRAD micro have been missing.

AMX MOUSE PACKAGE 3" DISC £79.95

There's not much joy in a joystick and keyboards can be all fingers and thumbs. Acclaimed by the press as 'the best input device', already over 50,000 micro users have adopted an AMX Mouse. No more complicated CP/M commands to remember, with the AMX Mouse you just point and click, even the experts find this system more efficient. Available for the Amstrad PCW 8256 & 8512.

GRAPHIC FRONT END

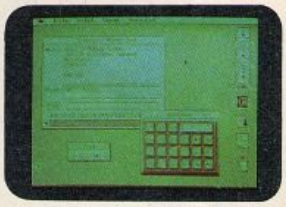
Provides an easy to use graphic based front end to your computers disc filing system including a comprehensive set of disc management operations such as cataloging, coping, deleting, re-naming and formating. There's no need to enter a command to run programs from disc, just point the mouse at the representing icon and click the button.



TELEPHONE ADDRESS BOOK

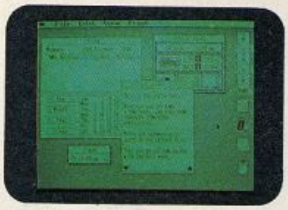
A central place to store all your important names, addresses and telephone numbers.

A database type search facility allows you to enter any part of the information such as a persons' name, company name, town etc and instantly see the matching entry.



DESK DIARY

A versatile appointments diary allowing you up to seven lines to be entered for any day. Printing facilities allow yearly and monthly summaries to be produced indicating days for which an entry has been indicated.

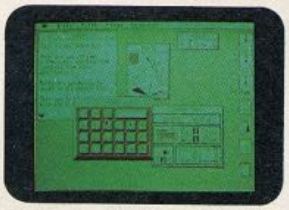


MEMO PAD

This allows anything from a quick memo to a complete multi-page report to be produced from the Desktop. Many word processing features are included such as centering, justification, cut, copy and paste etc.

DESK ACCESSORIES

The AMX Mouse package also includes a number of extra functions which are available for use at all times from the desktop. These include a jotter, alarm clock, calculator, puzzle and control panel – the type of tools found on a real desk top!



STOP PRESS... STOP PRESS...

There will be a growing list of further mouse compatible software for the Amstrad PCW from AMS and other leading software houses in the coming months including Graphic and Desktop publishing programs.

This superb product is available now from all good computer dealers or direct by cheque, Access or Visa. All prices include VAT and post and packaging.

FOR INSTANT ACCESS/VISA ORDERS TELEPHONE (0925) 413501/2/3

AMX SOFTWARE

IMAGINATION AT YOUR FINGERTIPS

ADVANCED MEMORY SYSTEMS LTD. 166/170 WILDERSPOOL CAUSEWAY, WARRINGTON, WA4 6QA. TELEX 628672 AMSG. FAX 0925 58039.

TUBELINK ON PRESTEL PAGE 2582182 SUPPORTS THE AMX MOUSE AND ALL AMS SOFTWARE

Macintosh is a licenced trade mark of Apple Inc. Atari St. is a trade mark of Atari Inc. Amiga is a trade mark of Commodore Business Machines Inc. Windows is a trade mark of Microsoft Inc. Gem is a trade mark of Digital Research Inc.

Protect yourself

The field of copyright as it applies to software is a minefield, despite an amendment to existing laws in 1985. Solicitor John Mawhood aims to clarify the issue

If you are hoping to get the A B C of copyright law as it applies to computer programs I am sorry to disappoint you: at the moment the law in this area is not cut and dried, and do not believe anyone who says otherwise.

Copyright started, as the name suggests, with the right to control the making of copies of a printed book and was first recognised by Parliament in 1709. Unfortunately, after a good start, as every new media invention (photography, gramophone, radio, cine-film, television, etc) came along, the concept of copyright has been further and further stretched to cover the copying of more and more kinds of "media".

Lawyers have been worried that if the law tries to control more than just the copying of *things* (books, records, tapes, discs, etc) the door would be open for people to claim copyright to an *idea*. Ideas are very difficult to control, and besides it is not in the public interest that one person should always be able to stop others copying an idea.

Rather than trying to make a fresh start to tackle the problem of computer software Parliament has slapped a patch over the cracks saying "all computer programs are to be treated as literary works and are therefore within copyright" (Copyright (Computer Software) Amendment Act 1985). Generally this means that the author owns the copyright which lasts for the period of the author's life and fifty years after their death.

Very simply, copyright in the UK is of two kinds: copyright in the "original work", and in the "derivative work". "Original" in this context means that you have put enough of your own knowledge, creative work, skill and judgment into the work and, for UK copyright law to apply, that you are a British or Irish national or you are resident or "domiciled" in the UK.

For example, if you write an "original" book, you are the author of the actual typed or hand-written copy and unless you sell your rights in that work to someone else, the copyright belongs to you. You can agree with a publisher to print copies of your book and sell them. The publisher will own the "derivative work" copyright – the right to make copies of the book as published by them – but not the "original work".

As the law stands at the moment if you write a computer program it is the same as if you had written a book or a poem, only the law recognises that computer programs can be easily translated into different computer languages and into machine code. All such translations, and even the "storage" in a computer of a program, can be breaking the author's copyright.

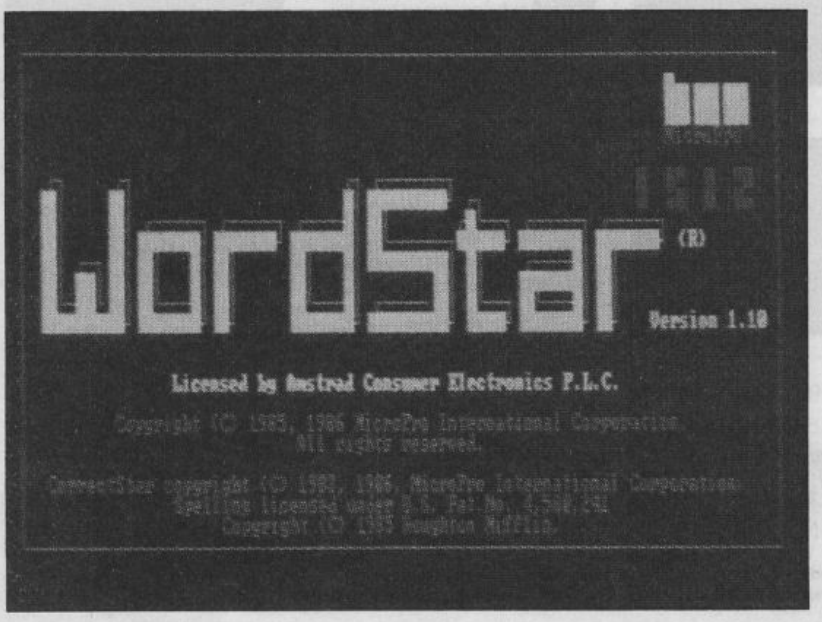
What happens when you buy a copy?

When you buy a copy of some software you do not buy the copyright in it. The person who owns the copyright is only allowing you to use the program stored on the cassette or disc. With business software costing more than a few pounds you will probably see a bit of paper inside the plastic seal when you buy it called a "licence". There will probably be a sticker on the package saying "If you open this package you accept the terms of the licence: return it to the manufacturer unopened if you do not for a refund" (see panel on opposite page for more on this).

Apart from saying exactly how you can use the software, the licence will probably disclaim liability for any defects in the software and say that if you return a registration card you will be entitled to upgrades, etc. It is quite possible that if you do not return the registration card that their liability for defects will not be excluded – but this has never been tested in court and unless you have the kind of money to spend on finding out . . .

What an author should know

In order to alert users – or anyone else – that copyright exists on your work, you should insert at or near the beginning or



Micropro's *Wordstar* – not only one of the most successful word processors, but also the most copied

end of your work the copyright symbol, ©, your name and the year of publication. Ideally in a computer program this will mean including this in the "first screen" shown to the user and also in the code itself: so if it is machine code, put a few bytes in with the right Ascii codes. If possible use the copyright symbol and not (c), but this is not possible in pure Ascii, a second best is to use the word 'copyright' itself – but these may not be enough to qualify under various nations' copyright conventions.

Copying even parts of someone else's code will usually be breaking their copyright. If you write something from scratch without copying and then find it is identical to someone else's, you have not infringed their copyright, but you may have difficulty proving this unless you wrote yours first and have done something like posting a copy of your source code to yourself in a carefully sealed letter which you do not open (and hope the postmark date is clear) or even better send it recorded delivery – or deposit it with a bank. If theirs is identical perhaps they copied yours, or what you have written is not "original".

Seriously though, if you want to have a hope of proving the originality of your work it is essential that you keep copies of the source code at the various stages of development with some means of proving the date at which they were made.

Another step you can take to help in proving that someone is using a copy of your code is to include in your distributed program portions of code which are redundant or have an odd construction, if these appear in a copy then it is a useful indication of where it came from.

Very often programs are not developed by one author to the stage where they are ready to sell. It is more likely that you have a good idea, perhaps some code which resulted, but you need help to make it into a finished product.

If you do have a program that is worth marketing try contacting an agent first, but whoever you speak to insist that they agree in writing first that your discussions are *in confidence* and try to make a note of what you have discussed at the time (even better send them a copy to confirm it). But if you are at that level of business then you really ought to take legal advice.

Broadly speaking if you impart new ideas to someone who has accepted a duty of confidence to you then you may be able to prevent them from taking advantage of their position later.

If two people work on a program jointly and it is not possible to say who wrote what, then the copyright in the program is jointly owned. This can create problems if you do not agree over what to do with it – again you may need advice.

If you are employed to write a program for someone, although the period of copyright is worked out from your lifetime, the copyright belongs to your employer and not to you. Be careful about writing a program on someone else's computer – there is an argument that copyright in your program could belong to the owner of the computer!

If you use a package to create a piece of software, unless the software you have written includes code that does not originate from you, you should be the sole owner of copyright in the code. However if it needs other code to run, for example a computer language, you do not own the copyright in the language program (unless you wrote the language too).

This is another reason for machine code being a good form in which to sell a program.

There may be other methods of getting effective protection for your rights in a product, such as Trade Mark and in some circumstances Patent, but these are outside the area covered by this article.

Conclusion

The law of copyright in England appears to be a case of "make do". Very few cases in the computer field have come to court, because it is very expensive. Would it not be better to have a law which tackled directly the problems of protecting rights in information technology? The uncertainty we have now only creates a fear of being "ripped off" and makes developing software an even more risky business.

As you will appreciate this is only a general overview of the area of copyright intended to help you understand it. You should not treat this article as a substitute for advice and I regret that I cannot accept any responsibility for any loss or damage arising.

The problem of copyright in software is a thorny one, and the various solutions proposed by software publishers have been no less problematical.

When you buy something – including software – you have a right to expect the product to function for a reasonable length of time – several years at a minimum.

Some make the software as near uncopyable as is possible, some provide a protected back-up on the assumption that if you damage both you deserve everything you get, others resort to arcane licensing agreements.

Under common agreements, when you hand over your money in a software shop and walk out with a program, you have not bought the software. You have bought a licence to use that software.

The licensing agreement will spell out in clear detail what you are and are not allowed to do with the software. Usually, you will be allowed to make a back-up for your own use.

The catch comes with software packages that hide the licensing agreement inside the package. Often you will open a package, only to read on the hidden form that opening the package has itself signified that you agree to the terms.

In such cases you should return the product and demand a refund. If the software publisher refuses, then you can do what you want with the software (subject, of course, to the general laws of copyright).

In cases where the terms of the licensing agreement are clearly spelled out on the outside of the package, and which you can read before you buy the software, you have no excuse for failing to agree to the terms, nor for breaching the agreement.

Opening the package is generally the point of no return – but it depends on the particular licensing agreement

Beyond Basic – the portability of C

The programming language C has been one of the most talked about for the last year or so. It is versatile, easy to learn and easily portable. This week, Kenn Garroch begins a series of articles on getting to grips with C, and how to use it. If you've ever wanted to know what lies beyond Basic, this could be the answer . . .

The C programming language combines the ease of programming you get with high level languages such as Pascal and Basic, with the low level memory access associated with machine code. In addition to these, it's fast.

C was written at Bell labs (where the transistor was invented) in 1972 as an outgrowth of a language called B which itself was an outgrowth of BCPL (BCPL was based on Algol, which is a high level programming language used on many mainframe computers). The original aim of C was to combine ease of programming with speed and portability.

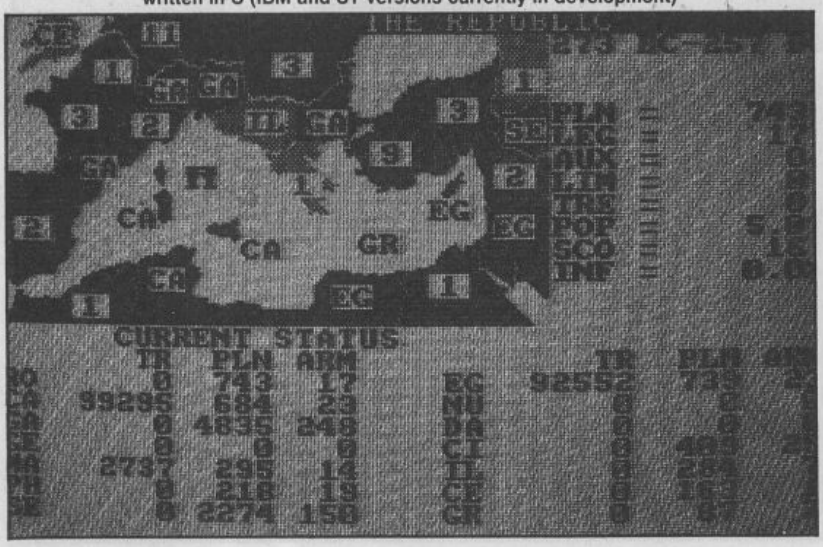
The reason for needing C was that Bell was designing the operating system Unix, of which you may have heard. It wanted Unix to be used on as many machines as possible so the language in which it was written had to be transferrable to other processors without too much fuss.

Assembler language

To this end, C is designed so that when it is compiled, it produces a set of assembler language statements which can then be assembled for the appropriate machine. The section that produces the assembler code is really the only bit of the standard language that is machine specific.

With most machines, there are lots of commands included in the C package that can be used in programs to save programming time and effort.

PSS's strategy game *Annals of Rome*. The IBM, Atari ST and Amstrad PCW versions are all written in C (IBM and ST versions currently in development)



These pre-defined commands reside in what is called a library file. For instance, in Hisoft's Amstrad C, there is one library file that contains all the commands that would be available from Basic, and another (in the CP/M version) that contains a set of graphics routines.

C is a structured language and in some ways, the commands are very like Pascal. In fact if you have ever written Pascal programs, you'll have no trouble using C. One of the features of the language is that it has a relatively small number of commands compared to other languages, Basic included. These commands can be put together to form more complex commands which can then be used directly.

String handling

For instance, there are no strings or string handling commands as such. However, by using character arrays, and defining functions that can access them, string handling can be made really easy. Usually, these come as part of a library so you don't need to write them.

The structure of a language defines the way in which commands are grouped together and this generally falls into three categories, decisions and looping, procedures, and functions. The decision and looping commands are the IF ELSE, WHILE, CASE, etc. These control the flow of the program, and in C, as in most other modern high level languages, there is no equivalent to the GOTO command in Basic.

Bad form

The reason for this is that it is 'bad form' to jump from place to place within a program and, if this is common, the program can be very hard to follow. The

alternative is to use looping commands such as WHILE (while something is true do the following set of commands).

This makes the program much easier to understand which, as anyone who has tried changing a program written a year or so ago, is pretty useful. Instead of trying to figure out 'I wonder how I did that', a program written in C should make sense.

Procedures

To make programs even easier to follow, procedures and functions can be defined. A procedure is a sequence of instructions that is separate from the main program and is given a name that identifies what it does, it is a 'doing command', ie, it produces no result.

A function is similar to a procedure except that it produces a result, eg, P=POINT(X,Y) might be a function that returns the value of a dot on the screen. C is unusual in that it has no procedures, only functions. Fortunately the functions are flexible enough to be procedures as well. The thing to remember is that they are always known as functions, whether they produce results or not.

A C program is made up of a definition section, where the variables, constants and any library files are defined, the main program, and the defined functions. Another way to help make programs readable is to give variables and constants meaningful names. So, if you want a counter, you can actually name it counter and refer to it as such within the program. The types of variables you can have in a C program are int, float, char, short, long, and double.

These are more or less the same as those provided in Basic, the difference being that once they are defined, ie, for characters, char S; you don't need to use a $ sign (as in S$) to make sure the program knows it's a string.

In some of the more recent versions of Basic, it is possible to do the same thing but it is certainly not the norm.

Printing information

One of the unusual things about C is the way in which things are printed on the screen. The command that does the trick is printf (note that C commands do not have to be upper case (capital letters), they can be either, and are usually lower case). The function prints information on the screen in the following way: printf("This is a message"); simply puts *This is a message* on to the screen. It does not do a carriage return, and printf("So is this"); results in *This is a messageSo is this* being displayed.

To put formatting commands into a string, the / character followed by the command is used. /n denotes a new line and usually, but not always, a carriage return. So printf("Hi there/n") then printf("Ho there/n") puts the two messages on separate lines.

Why change to C?

The thing to notice about format commands is that they are within the quotes. A similar thing is done when printing out variables.

The command %d is used to specify the position of the variable and then the actual variables are placed after the quotes. For example, if there were an integer variable a, to print its value, printf("a equals %d",a); is used.

If you have been using Basic for all of your programming, why change to C? As you will see over the next few weeks, C is very versatile, it is easy to include machine code as part of a program if necessary, it makes programming much easier since handling information is far easier than in Basic, and more than anything, it is easy to learn.

Next week, Kenn Garroch continues with some sample C programs.

Selected C compilers

Program *HiSoft C* **Micro** Spectrum **Price** £25.00 **Supplier** HiSoft, The Old School, Greenfield, Bedford MK45 5DE (0525 78181).

Program *HiSoft C* **Micro** Any CP/M Z80 based system, eg, Amstrad with disc drive **Price** £39.95 **Supplier** HiSoft, address as above.

Program *Lattice C Compiler* **Micro** Atari ST **Price** £99.95 **Supplier** Metacomco, 26 Portland Square, Bristol BS2 8RZ (0272 428781).

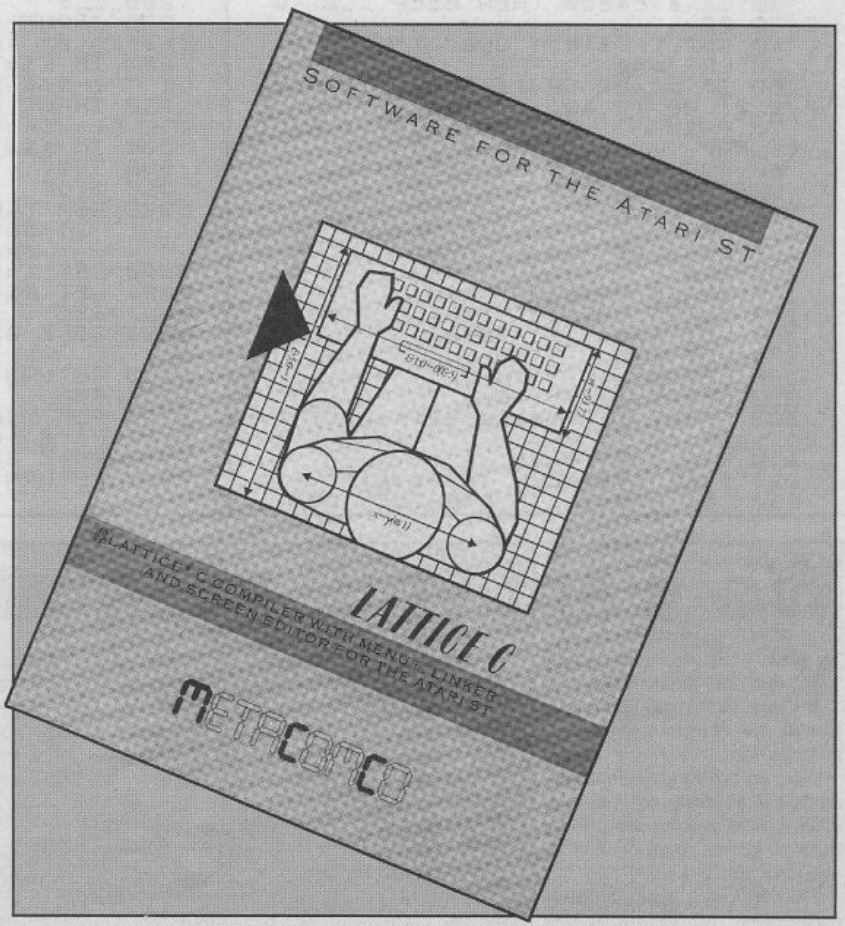
Program *Megamax C* **Micro** Atari ST **Price** £157.55 **Supplier** Selected Atari dealers, including Silica Shop, 1–4 The Mews, Hatherley Road, Sidcup, Kent DA14 4DX (01-309 0300).

Program *GST C Compiler* **Micro** Atari ST **Price** £59.00 **Supplier** Electric Software, Unit 8, Cromwell Business Centre, New Road, St Ives, Cambs (0480 66433).

Program *Lattice C Compiler* **Micro** QL **Price** £99.95 **Supplier** Metacomco, address as above.

Program *GST C Compiler* **Micro** QL **Price** £59.95 **Supplier** Electric Software, address as above.

Program *Lattice C Compiler* **Micro** Commodore Amiga **Price** £129.95 **Supplier** Metacomco, address as above.



Metacomco's Lattice C compiler (see selected software, left)

DataTransfer

Umer Nalla

This program converts data produced by the Graphic Finder (Vol 6 issue 15) into normal character data format. The program also transfers the character set from the *Rom* into an area in *Ram*. The program then stores the shapes in place of the usual characters.

Data Transfer requires the following inputs. *Load address,* where the shapes data, produced by GF, is loaded in. *Char address,* where the new character is set.

Start character, the code for the first character to be redefined (see manual).

Width, is the width of shape.

Height, is the height of the shape. Divide GF height by eight and round up.

The user must use a *CLEAR (char address – 1)* to accommodate the character set. To use it in your own programs add lines 9990–9997 to your program (*ca* is the address to load the character set at). Type *GOSUB 9990* to activate the character set at ca. Type *GOSUB 9996* to switch to the normal set. More than one character set can be used as long as you use the variable *ca* and *GOSUB 9990* to call it.

```
    1 REM © UMER NALLA 1987
   10 INPUT "Load Address  ";la
   20 INPUT "Char Address   ";a: L
ET ca=a
   30 IF a>64600 THEN BEEP 1,0: G
O TO 20
   40 INPUT "Start Char  ";sc
   50 LET s=a
   60 IF sc<32 OR sc>128 THEN BEE
P 1,0: GO TO 40
   70 PRINT "  Please wait... ROM
 to RAM      transfer."
   80 FOR n=15616 TO 15616+768
   90 POKE s,PEEK n
  100 LET s=s+1
  110 NEXT n
  120 LET f=0
  130 CLS
  140 INPUT "WIDTH ";wi
  150 INPUT "HEIGHT ";hi
  160 LET a=a+((sc-32)*8)
  170 LET w=0
  180 LET p1=la
  190 LET nb=wi*hi*8-1
  200 PRINT "  Please wait...conv
erting"
  210 FOR k=0 TO nb
  220 POKE k+a,PEEK (p1+w*wi)
  230 LET w=w+1: IF w=8 THEN LET
 w=0: LET p1=p1+1: LET f=f+1
  240 IF f=wi THEN LET f=0: LET p
1=p1+wi*7
  250 NEXT k
  260 CLS
  270 INPUT "Do you wish to SAVE
character set ";s$
  280 IF s$="y" OR s$="Y" THEN SA
VE " char$ set"CODE ca,768
  290 INPUT "Do you wish to activ
ate new char$ set ";s$
  300 IF s$="y" OR s$="Y" THEN GO
 SUB 9990
  310 STOP
8999 REM Type GOSUB 9990
         Set 'ca' to address of
         character set.
9990 LET s=ca-256
9991 LET n1=INT (s/256): LET n2=
s-n1*256
9992 POKE 23606,n2: POKE 23607,n
1
9993 RETURN
9994 REM
9995 REM Type GOSUB 9996 for nor
mal char$ set.
9996 POKE 23606,0: POKE 23607,60
9997 RETURN
```

We want your programs!!

Yes, this is your chance to get rich and famous. Well, famous anyway, as *Popular Computing Weekly* is looking for contributions to the Programming pages.

What sort of thing are we looking for? You name it – anything original from games to utilities, applications and the like, written in Basic, machine code or anything else you can think of.

Programs for any computer will be considered, not just the old faithfuls (Spectrum, Amstrad, QL, Commodore, etc), so send those listings in. What we need is a working copy of the program on tape or disc, plus an accompanying article or documentation that you would anticipate going with the piece, normally not over 2000 words.

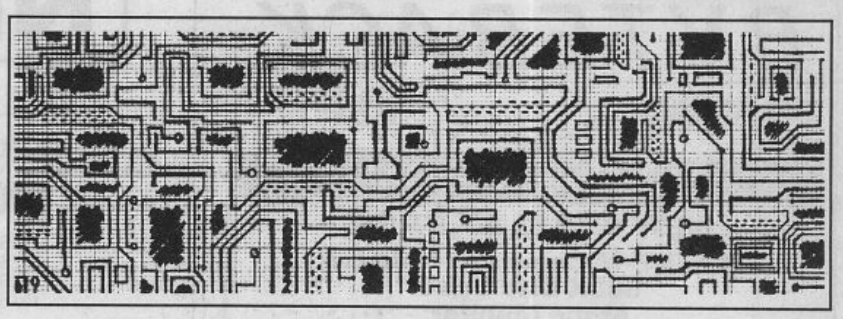
Alternatively, send in your short programs to the Bytes and Pieces page – what could be easier?

In return, we'll pay the princely sum of £25/page for the main programming pages and £10 for each Bytes & Pieces contribution we publish. Plus the fact that your name will be indelibly carved in the *Popular* Programming Hall of Fame till time immemorial. What more could any true programmer ask?

Just send your masterpieces in to **Duncan Evans, Technical Editor, Popular Computing Weekly, 12–13 Little Newport St, London WC2 7PP** and he'll assess them post haste.

Spectrum Rom Calls

Russell Thomas



As I indicated in the last issue, you can combine any of these commands to form the basis of your own OS. You could even mimic the Spectrum OS if you like using your own report messages etc. As an example, let's say we wish to stop the execution of our program if a certain condition arises and report the stop with our own message. Then, return to the Basic Editor. To do this all we need to do is *WAITKEY$,LOWER CLS,EDITOR.*

100 IF . . . THEN INPUT "OS ERROR: Bad string type.";USR 5598: RANDOMIZE USR 3438: RANDOMIZE USR 4777

This will require an extra key press to return to the listing. If you want a list straight away use *AUTOLIST* in place of *EDITOR*

100 IF . . . THEN INPUT "OS ERROR: Unknown command.";USR 5598: RANDOMIZE USR 3438: RANDOMIZE USR 4770

You may not wish to return to the Basic Editor at all, but jump to your own routine as in the following.

100 INPUT "Press any key . . . ";USR 5538: RANDOMIZE USR 3438:GO TO . . .

An obvious use for your own OS is in designing your own language from within Basic. It will run slowly, but the programming problems you will come across are bound to excite and eventually educate you in the art of OS design. Don't be afraid to experiment as the successes (and failures) are all part of learning and experience.

System Variables

Below, I have listed the SV's that I regularly use to produce effects I want or need in my programs. If you know of any others of interest, let us know via *Popular* so we can all have a go.

23560 *LAST K* – Remembers the (Ascii code) last key to be pressed. A useful alternative to INKEY$ which forgets it as soon as you let go.

23561 *REPDEL* – Want a faster cursor? *POKE 23561, 1:POKE 23562, 1*

23609 *PIP* – That silly little click when you press a key. Have a *POKE* and see!

23610 *ERR NR* – Useful one for detecting which error has occurred in a break protected program. Add 1 to it to get the error error code.

23613 *ERR SP* – Usually addresses an item on the Z80 stack to be used as a return if an error occurs. Use *POKE 23613,PEEK 23730 –5* to disable **Break.** Better left alone.

23617 *MODE* – To change the cursor you get when using *INPUT*, first *POKE 23617,X.* Where **X** is any number you fancy. Some are better than others . . .

23618, 23619 and 23620 *NEWPPC, NSPPC* – Line No and Statement No to be jumped to. Who said you can't execute a *REM* statement, try the following:

50 REM:PRINT "A REM STATEMENT" :GOTO 70

60 POKE 23618,0:POKE 23619,50:POKE 23620,2

70 . . .

23621, 23622 and 23623 *PPC, SUBPPC* – Stores the line number of the line the computer is actually working on. You can create a crude *TRACE* using *PPC* and *SUBPPC.* Insert a line *DEF FN P()=PEEK 23621+256*PEEK 23622* in your prog and use *PRINT FN P()* in any lines you wish to trace.

23624 *BORDCR* – Border colour/*ATTR* for lower screen. Use *8*paper+ink*, eg 8*7+0 is white paper and black ink. Use this for security typing, eg password entry. Try:

10 POKE 2364,63:INPUT A$:IF A$<>"PASSWORD" THEN NEW – The next line should put *BORDCR* back to normal of course.

23625 *E PPC* – This is the Editor's current line (the one with the '>' on it. *POKING* this and *S TOP* (see below) with a valid line number will cause the autolisting to be started at that line No.

23627 *VARS* – Holds the address in memory of the start of your own variables (**a$** etc). See the manual for a better guide.

23635 *PROG* – Holds the address in memory of the start of your Basic program. You can move it (up) in memory if you like but make sure you move any subsequent SV's and any info addressed by them accordingly. See your memory map for 'start up' conditions. This is an alternative to changing *RAMTOP* for storing machine code. Do this to store it below your program.

23637 *NXTLIN* – Holds the address of the next line (to be executed) in the program. If you wish to find the address of line 200 then insert:

199 PRINT PEEK 23637+256*PEEK 23638:STOP and then type *GO TO 199*

More Rom calls in the final instalment next week.

Icon Toolkit

Simon T Goodwin

This week features the remaining part of the data statement list for the actual Icon Toolkit program. Next week we'll publish the Icon Designer program and accompanying documentation. In the meantime I'll ask Simon if he wants to offer the programs on tape/disc. Stay tuned.

```
530 DATA 7F,A1,2A,2A,A0,23,23,22
540 DATA 2A,A0,CD,7F,A1,C9,21,10
550 DATA 00,ED,4B,2A,A0,ED,42,D0
560 DATA CD,7F,A1,2A,2A,A0,2B,2B
570 DATA 22,2A,A0,CD,7F,A1,C9,3A
580 DATA 34,A0,CD,DE,BB,ED,5B,28
590 DATA A0,2A,2A,A0,CD,C0,BB,3E
600 DATA 05,CD,5A,BB,3E,5E,CD,5A
610 DATA BB,3A,35,A0,CD,DE,BB,C9
620 DATA DD,6E,00,DD,66,01,22,39
630 DATA A0,C9,DD,7E,00,47,21,7C
640 DATA A3,11,04,00,AF,ED,52,19
650 DATA 10,FD,DD,5E,04,DD,56,05
660 DATA DD,4E,02,DD,46,03,7B,77
670 DATA 23,7A,77,23,79,77,23,78
680 DATA 77,C5,EB,11,02,00,CD,A9
690 DATA A2,EB,E1,CB,3C,CB,1D,CD
700 DATA 1D,BC,E5,DD,7E,00,47,2A
710 DATA 39,A0,11,40,00,AF,ED,52
720 DATA 19,10,FD,EB,E1,01,10,04
730 DATA CD,91,A2,C9,21,7C,A3,CD
740 DATA 33,A2,3E,01,32,38,A0,06
750 DATA FF,C5,E5,ED,4B,28,A0,ED
760 DATA 5B,2A,A0,CD,48,A2,E1,C1
770 DATA 3A,37,A0,FE,00,20,0D,CD
780 DATA 33,A2,3A,38,A0,3C,32,38
790 DATA A0,10,DE,C9,3A,38,A0,32
800 DATA 36,A0,C9,7E,5F,23,7E,57
810 DATA ED,53,30,A0,23,7E,5F,23
820 DATA 7E,57,ED,53,32,A0,23,C9
830 DATA AF,32,37,A0,3A,30,A0,6F
840 DATA 3A,31,A0,67,ED,42,7C,FE
850 DATA 00,20,07,7D,FE,14,D0,18
860 DATA 08,C9,FE,FF,D8,7D,FE,EB
870 DATA D8,3A,32,A0,6F,3A,33,A0
```

continued on page 34 ▶

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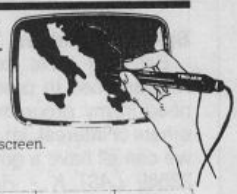

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DRAW LINE	✓	✓	✓	✓	–	✓	–
DRAW TRIANGLE	✓	✓	✓	✓	–	✓	–
DRAW RAYS	✓	✓	✓	✓	✓	✓	–
PEN THICKNESSES	1	5	5	1	1	4	1
PEN QUILLS	–	3	3	–	–	2	–
PAINT BRUSH	–	✓	✓	–	–	✓	–
TEXT	✓	✓	✓	✓	✓	✓	✓
PIN POINT ACCURACY	✓	✓	✓	✓	–	✓	–
ACTIVE BANDING	–	✓	✓	–	–	✓	–
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◀ continued from page 31

```
880 DATA 67,42,4B,ED,42,7C,FE,00
890 DATA 20,0A,7D,FE,18,D0,3E,01
900 DATA 32,37,A0,C9,FE,FF,D8,7D
910 DATA FE,E7,D8,3E,01,32,37,A0
920 DATA C9,C5,E5,1A,77,23,13,10
930 DATA FA,E1,01,00,08,09,30,04
940 DATA 01,50,C0,09,C1,0D,20,E9
950 DATA C9,7A,2F,57,7B,2F,5F,13
960 DATA E5,AF,67,6F,E3,7A,B3,20
970 DATA 02,E1,C9,06,11,CB,15,CB
980 DATA 14,38,10,10,F8,18,14,E3
990 DATA E5,19,30,01,E3,E1,E3,CB
1000 DATA 15,CB,14,E3,CB,15,CB,14
1010 DATA E3,10,EC,D1,CB,2A,CB,1B
1020 DATA C9,DD,6E,06,DD,66,07,DD
1030 DATA 5E,04,DD,56,05,DD,4E,00
1040 DATA DD,46,02,C5,E5,7E,12,23
1050 DATA 13,10,FA,E1,01,00,08,09
1060 DATA 30,04,01,50,C0,09,C1,0D
1070 DATA 20,E9,C9,DD,6E,06,DD,66
1080 DATA 07,DD,5E,04,DD,56,05,DD
1090 DATA 4E,00,DD,46,02,C5,E5,1A
1100 DATA 77,23,13,10,FA,E1,01,00
1110 DATA 08,09,30,04,01,50,C0,09
1120 DATA C1,0D,20,E9,C9,DD,6E,02
1130 DATA DD,66,03,DD,5E,04,DD,56
1140 DATA 05,CB,3C,CB,1D,CD,1D,BC
1150 DATA 18,0C,C9,DD,6E,02,DD,66
1160 DATA 04,2D,25,CD,1A,BC,DD,5E
1170 DATA 00,DD,56,01,7D,12,13,7C
1180 DATA 12,C9,C5,E5,3A,A5,A0,77
1190 DATA 23,13,10,F8,E1,01,00,08
1200 DATA 09,30,04,01,50,C0,09,C1
1210 DATA 0D,20,E7,C9,00,00,00,00
1220 DATA 00,00,00,00,00,00,00,00
1230 DATA 00,00,00,00,00,00,00,00
1240 DATA 00,00,00,00,00,00,00,00
1250 DATA 00,00,00,00,00,00,00,00
1260 DATA 00,00,00,00,00,00,00,00
1270 DATA 00,00,00,00,00,00,00,00
1280 DATA 00,00,00,00,00,00,00,00
1290 DATA 00,00,00,00,00,00,00,00
1300 DATA 00,00,00,00,00,00,00,00
1310 DATA 00,00,00,00,00,00,00,00
1320 DATA 00,00,00,00,00,00,00,00
1330 DATA 00,00,00,00,00,00,00,00
1340 DATA 00,00,00,00,00,00,00,00
1350 DATA 00,00,00,00,00,00,00,00
1360 DATA 00,00,00,00,00,00,00,00
1370 DATA 00,00,00,00,00,00,00,00
1380 DATA 00,00,00,00,00,00,00,00
1390 DATA 00,00,00,00,00,00,00,00
1400 DATA 00,00,00,00,00,00,00,00
1410 DATA 00,00,00,00,00,00,00,00
1420 DATA 00,00,00,00,00,00,00,00
1430 DATA 00,00,00,00,00,00,00,00
1440 DATA 00,00,00,00,00,00,00,00
1450 DATA 00,00,00,00,00,00,00,00
1460 DATA 00,00,00,00,00,00,00,00
1470 DATA 00,00,00,00,00,00,00,00
1480 DATA 00,00,00,00,00,00,00,00
1490 DATA 00,00,00,00,00,00,00,00
1500 DATA 00,00,00,00,00,00,00,00
1510 DATA 00,00,00,00,00,00,00,00
1520 DATA 00,00,00,00,00,00,00,00
1530 DATA 00,00,00,00,00,00,00,00
1540 DATA 00,00,00,00,00,00,00,00
1550 DATA 00,00,00,00,00,00,00,00
1560 DATA 00,00,00,00,00,00,00,00
1570 DATA 00,00,00,00,00,00,00,00
1580 DATA 00,00,00,00,00,00,00,00
1590 DATA 00,00,00,00,00,00,00,00
1600 DATA 00,00,00,00,00,00,00,00
1610 DATA 00,00,00,00,00,00,00,00
1620 DATA 00,00,00,00,00,00,00,00
1630 DATA 00,00,00,00,00,00,00,00
1640 DATA 00,00,00,00,00,00,00,00
1650 DATA 00,00,00,00,00,00,00,00
1660 DATA 00,00,00,00,00,00,00,00
1670 DATA 00,00,00,00,00,00,00,00
1680 DATA 00,00,00,00,00,00,00,00
1690 DATA 00,00,00,00,00,00,00,00
1700 DATA 00,00,00,00,00,00,00,00
1710 DATA 00,00,00,00,00,00,00,00
1720 DATA 00,00,00,00,00,00,00,00
1730 DATA 00,00,00,00,00,00,00,00
1740 DATA 00,00,00,00,00,00,00,00
1750 DATA 00,00,00,00,00,00,00,00
1760 DATA 00,00,00,00,00,00,00,00
1770 DATA 00,00,00,00,00,00,00,00
1780 DATA 00,00,00,00,00,00,00,00
1790 DATA 00,00,00,00,00,00,00,00
1800 DATA 00,00,00,00,00,00,00,00
1810 DATA 00,00,00,00,00,00,00,00
1820 DATA 00,00,00,00,00,00,00,00
1830 DATA 00,00,00,00,00,00,00,00
1840 DATA 00,00,00,00,00,00,00,00
1850 DATA 00,00,00,00,00,00,00,00
1860 DATA 00,00,00,00,00,00,00,00
```

PROGRAMMING: BBC

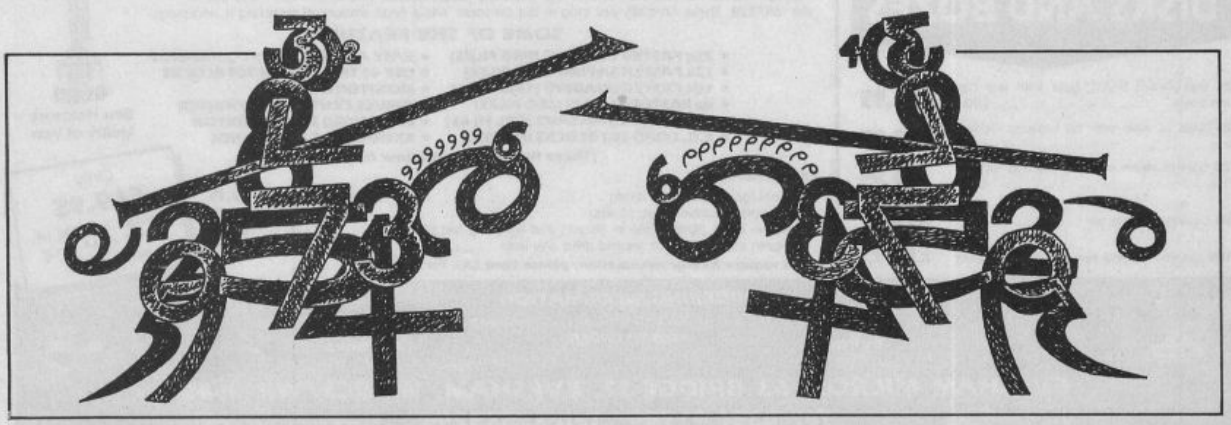
Magic Maze

Mark Weatherill

Okay BBC owners, this is the big one. Magic Mazes is a wonderful platform game with bouncing sprites and continuous music. It's also hellishly long.

There are four listings in all, the main program followed by three data listings, which must be saved in order if you are a cassette user. More details follow next week.

If you can't bear the wait then send £2.00 (cassette), to 18 Kingsland, Aylesbury, Bucks HP21 9SY, and Mark will send you a copy of the game.



```
L.
  10REM MAGIC MAZE by Mark Weatherill
  20REM Listing one :save as 'game'
  30REM
  40REM Disc users set PAGE to &1200
  50REM
  60IF !&900<>&60703010 PROCLOAD
  70REM ONERROR GOTO 3290
  80REM escape restarts game
  90REM leave line 70 out until debugge
d!
 100MODE5:VDU23;8202;0;0;0;
 110HIMEM=&4000
 120DEFPROCE:VDU19;1;0;:SOUND&10,-9,2,1
:E%=E%-1:PRINTTAB(12,25);E%;" ":VDU19;0;
0;:IFE%<=0 E%=20:PROCL:ENDPROC ELSEENDPR
OC
 130DEFPROCL:L%=L%-1:FORQ%=10 TO 0 STEP
-1:SOUND1,2,Q%*2,1:NEXT:?NX%=SX%:?NY%=SY
%:PROCSCR(S%):ENDPROC
 140DEFPROCS(s%):V%=V%+s%:PRINTTAB(12,2
3);V%:ENDPROC
 150DEFPROCmv(X%,Y%):CALLmv:ENDPROC
 160KX%=&5600:KY%=&563C:KXC%=&5678:KYC%
=&56B4
 170NX%=&56F0:NY%=&56FB:NT%=&5706:NXD%=
&5711:NYD%=&571C:DX%=NX%+55:DY%=NX%+66:L
XL%=NX%+77:LXR%=NX%+88:LYU%=NX%+99:LYD%=
&575E
 180SP%=NX%+121:SC%=NX%+132
 190RESTORE200:FORQ%=0 TO 10:READ DX%?Q
%,DY%?Q%:NEXT
 200DATA 2,2, 2,1, 2,1, 1,2, 1,2, 2,2,
2,2, 1,3, 3,1, 3,3, 3,3
 210SD%=&4F00
 220tmp=&70:mpc=&72:tmp2=&80:x=&82:y=&8
3
 230x2=&84:kx=&85:ky=&87:kc=&89:ki=&8A
 240apc=&404:bpc=&408:bladr=&434
 250copy=&438:REM M%
 260l=&C18:r=&C19:u=&C1A:d=&C1B
 270PROCasm
 280ENVELOPE1,129,0,0,0,3,3,3,-3,-3,-3,
-4,77,0:ENVELOPE2,2,-1,1,0,3,3,0,-1,-1,-
1,-1,77,0
 290VDU23,224,&FBFB;&DFDF;&FBFB;&DFDF;
 300VDU23,225,255,129,60,60,60,60,129,2
55
 310VDU23,226,&FFFF;195,195,195,195,&FF
FF;
 320VDU23,228,24,36,66,129,129,66,36,24
 330VDU23,229,255;255;255;255;
 340VDU23,230,255,129,126,60,60,126,129
,255
 350VDU23,255,8+16,8+16+4+32,8+4+32+66,
254,2+4,8+16+4+32+66,8+16+4+32,8+16
 360MV%=50:V$="MARK"
 370REPEAT RESTORE1350
 380FORQ%=0 TO &3C:KXC%?Q%=KX%?Q%:KYC%?
Q%=KY%?Q%:NEXT
 390VDU26:CLS:PROCtitle:CLS
 400S%=0
 410K%=0:FORQ%=0 TO 59:IFKX%?Q%<>255 K%
=K%+1
 420NEXT
 430L%=2:E%=20:V%=0:J%=0:H%=0
 440SN%=1
 450?NX%=6:?NY%=10:?NT%=0
 460PROCSCR(S%)
 470REPEAT COLOUR3
 480IFINKEY-97SN%=SN%EOR1:PRINTTAB(17,2
1);" ":IFSN%=0PRINTTAB(17,21);"Q"
 490IFSN% IFADVAL-8=15PROCT
 500IF?NX%=31 ?NX%=0:S%=S%+1:PROCSCR(S%
)
 510IF?NX%=255 ?NX%=30:S%=S%-1:PROCSCR(
S%)
 520IF?NY%=0 ?NY%=17:S%=S%+4:PROCSCR(S%
)
 530IF?NY%=18 ?NY%=1:S%=S%-4:PROCSCR(S%
)
 540CALL hitme:IFH% PROCE
 550CALLpeeks
 560IFJ% PROCj:GOTO630
 570IF?d=0 PROCmv(0,1):SOUND&11,-5,100-
(?NY%),1:GOTO630
 580IFJ%=0IFINKEY-74 J%=1
 590X%=0
 600IFINKEY-98 PROCch(1):PROCmv(-1,0):G
OTO630
 610IFINKEY-67 PROCch(2):PROCmv(1,0)
 620IF?&EC=0:*FX19
 630
 640CALLrest
 650C%=KXC%+5*S%:D%=KYC%+5*S%:CALLkeys
 660COLOUR3
 670H%=0:CALLhitk:IFH%:PROCS(10):SOUND&
12,1,200,10:PRINTTAB(12,27);K%;" "
 680UNTIL L%=-1 OR K%=0
 690VDU28;19,19;
 700IFL%=-1 PROCdie ELSE PROCdun
 710*FX15
 720IFV%>MV% CLS:PROCTX(4,6,"Well done"
):PROCTX(2,8,"Enter your name"):PROCTX(2
,9,"(max 9 letters)"):INPUTTAB(0,11);V$:
MV%=V%:IFLENV$>9V$=LEFT$(V$,9)
 730UNTILO
 740DEFPROCch(Q%):Z%=?NT%
 750CALLs
 760IFZ%MOD2=0 SOUND&10,-7,1,1
 770IFQ%=1:IF(Z%<>1 ANDZ%<>0)Z%=0:GOTO8
10
 780IFQ%=2:IF(Z%<>2 ANDZ%<>3)Z%=2:GOTO8
10
 790IFZ%=0 ORZ%=1 Z%=Z%EOR1
 800IFZ%=2 ORZ%=3 Z%=Z%EOR1
 810?NT%=Z%:CALLs:ENDPROC
 820DEFPROCj
 830Q%=0:IFINKEY-98Q%=-1 ELSEIFINKEY-67
Q%=1
 840IFQ%=1 CALLs:?NT%=2:CALLs ELSEIFQ%=
-1 CALLs:?NT%=0:CALLs
 850SOUND&11,-5,110-?NY%,1
 860IFJ%=1 PROCmv(0,-1) ELSE IFJ%=2 PRO
Cmv(0,-1)
 870IFJ%=3 PROCmv(0,-1) ELSE IF J%=4 PR
OCmv(Q%,-1)
 880IFJ%=5 PROCmv(Q%,-1) ELSE IF J%=6 P
ROCmv(Q%,-1)
 890IFJ%=7 PROCmv(Q%,1) ELSE IF J%=8 PR
OCmv(Q%,1)
 900IFJ%=9 PROCmv(Q%,1) ELSE IFJ%=10 PR
OCmv(0,1)
 910IFJ%=11 PROCmv(0,1) ELSE IFJ%=12 PR
OCmv(0,1)
 920J%=J%+1:IFJ%=13 J%=0
 930ENDPROC
 940DEFPROCSCR(S%)
 950VDU28,18,30,18;:COLOUR129:COLOUR3:P
RINT"Mark's Magic Mazes"
 960SX%=?NX%:SY%=?NY%
 970sd%=&4F00+(S%*(6*10))
 980FORs%=1 TO 10:Q%=s%-1
 990ad%=sd%+Q%*6
1000LXL%?s%=?ad%:LXR%?s%=ad%?1
1010LYU%?s%=ad%?2:LYD%?s%=ad%?3
1020NT%?s%=ad%?4:SP%?s%=ad%?5:SC%?s%=ad
%?5
1030NEXT
1040?kc=1:?ki=1
1050VDU20,28;31,15;30
1060IFS%MOD2=0 VDU19,1,1;0;19,2,2;0; EL
SE VDU19,1,5;0;19,2,6;0;
1070T%=&4000+(S%*320):CALLscr:VDU26
1080C%=KXC%+5*S%:D%=KYC%+5*S%
1090FORQ%=0 TO 4
1100IF?(C%+Q%)=255 GOTO1130
1110?(C%+Q%)=?((KX%+5*S%)+Q%)
1120?(D%+Q%)=?((KY%+5*S%)+Q%)
1130NEXT
1140FORQ%=1 TO 10:NX%?Q%=LXL%?Q%:NY%?Q%
=LYU%?Q%
1150NXD%?Q%=0:NYD%?Q%=0:IF LXL%?Q%=LXR%
?Q% NYD%?Q%=1 ELSE NXD%?Q%=1
1160IF LXL%?Q%=LXR%?Q% IFLYU%?Q%=LYD%?Q
% NT%?Q%=&FF
1170X%=Q%:CALLs
1180NEXT
1190X%=0:CALLs
1200GCOL0,2:MOVE 32,0:DRAW0,32:PLOT17,0
,310:PLOT17,32,32:PLOT17,1200,0:PLOT17,3
2,-32:PLOT17,0,-310:PLOT17,-32,-32:PLOT1
7,-1200,0
1210MOVE0,300:PLOT17,1280,0
1220MOVE0,112:PLOT17,1280,0
1230VDU26:COLOUR128
1240COLOUR3:PRINTTAB(1,21);"Screen";TAB
(11);S%
1250PRINTTAB(1,25);"Energy:";TAB(11);E%
:IFL%)-1 COLOUR2:PRINTTAB(16,21);STRING$
(L%,CHR$255);" ":COLOUR3
1260PRINTTAB(1,23);"Score :";TAB(11);V%
1270PRINTTAB(1,27);"Items left";TAB(11)
;K%
1280PRINTTAB(1,29);"Best  :";TAB(11);MV
%;TAB(1,30);V$
1290ENDPROC
1300DEFPROCT
1310READ Q%:IFQ%=255 RESTORE1350:ENDPRO
C
1320e%=1:IFQ%=0 e%=0
```

continued on page 37 ▶

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```
1330IFQ%>33 e%=2
1340SOUND3,e%,Q%,4:ENDPROC
1350DATA 9,13,13,13,9,13,13,13,13,13,21
,13,25,13,33,25,13,13,21,13,25,13,33,25,
137,13,21,13,25,13,33,25,13,13,21,13,25,
13,33,25,137,13,21,13,25,13,33,25,137,11
3,21,13,25,13,33,25,13,113,125,133,137,1
37,13,137
1360DATA137,13,133,125,121,117,121,117,
109,89,21,13,25,13,33,25,13,13,21,13,25,
13,33,25,13,13,21,13,25,13,33,25
1370DATA 57,61,61,61,57,61,61,61,57,61,
61,61,73,69,61,13,89,21,13,25,97,33,25,1
3,77,73,77,0,0,0,0,0,57,61,61,13,57,61,6
1,25,57,61,61,61,73,69,61,13,89,21,13,25
,97,33,25,13,77,73,77,13,25,13,33,25
1380DATA255
1390DEFPROCdun
1400FORQ%=10 TO 65 STEP4:SOUND1,2,Q%,4:
SOUND2,2,Q%*2,4:SOUND3,2,Q%*3,4:NEXT
1410FORQ%=0 TO 10:NT%?Q%=0:NEXT
1420CLS:PROCTX(8,10,"Well done!"):PROCT
X(3,12,"You completed"):PROCTX(6,14,"the
 game")
1430ENDPROC
1440DEFPROCdie:*FX15
1450FORQ%=65 TO 10 STEP-4:SOUND1,2,Q%,4
:SOUND2,2,Q%*2,4:SOUND3,2,Q%*3,4:NEXT
1460FORQ%=0 TO 10:NT%?Q%=0:NEXT
1470CLS:PROCTX(8,10,"Game Over")
1480PROCTX(6,12,"press a key")
1490Q%=GET
1500ENDPROC
1510DEFPROCtitle:VDU20
1520COLOUR1:PRINTSTRING$(20,CHR$224):PR
OCTX(7,2,"Magic * Mazes")
1530COLOUR2:PRINT''"  by M Weatherill"
1540COLOUR1:PRINTTAB(0,20);STRING$(20,C
HR$224)
1550COLOUR2:PRINT'"Keys:"'"(Z) (X) (RET
URN)"
1560PRINT"TAB : tune on/off"
1570FORQ%=1 TO 19:PRINTTAB(0,Q%);CHR$22
9;TAB(19,Q%);CHR$229:NEXT
1580REPEAT ?NX%=8:?NY%=18
1590X%=0:CALLs
1600FORQ%=0 TO 20:PROCch(2):PROCmv(1,0)
:A$=INKEY$12:*FX19
1610IFA$=" "Q%=20
1620COLOURTIME MOD3:PRINTTAB(4,12);"Pres
s Space"
1630NEXT
1640IFA$=" "GOTO1700
1650FORQ%=0 TO 20:PROCch(1):PROCmv(-1,0
):A$=INKEY$12:*FX19
1660IFA$=" "Q%=20
1670COLOURTIME MOD3:PRINTTAB(4,12);"Pres
s Space"
1680NEXT
1690X%=0:CALLs
1700UNTILA$=" ":ENDPROC
1710DEFPROCasm
1720FORo%=0 TO 2 STEP2
1730sdat=&A80
1740P%=&51D0
1750[OPTo%
1760.s LDA NT%,X:CMP#255:BEQstop
1770.initadr ASLA:TAY:LDA sdat,Y:STA tm
p:LDA sdat+1,Y:STA tmp+1
1780LDANX%,X:BMIstop
1790LDA#0:STAapc:.aloop
1800LDA#0:STAbpc:.bloop
1810JSR calcm
1820.pblock LDA&434:STAmpc:LDA&435:STAm
pc+1:LDY#0:.plop LDA(tmp),Y:EOR(mpc),Y:S
TA(mpc),Y:INY:CPY#8:BNE plop:LDAtmp:CLC:
ADC#8:STAtmp:LDAtmp+1:ADC#0:STAtmp+1
1830INCbpc:LDAbpc:CMP DY%,X:BMIbloop
1840INCapc:LDAapc:CMP DX%,X:BMIaloop
1850.stop RTS
1860.calcm
1870LDA#0:STA bladr:LDA#&58:STAbladr+1
1880LDA NX%,X:CLC:ADC apc:CLC:ROLA:ROLA
:ROLA
1890CLC:ADCbladr:STAbladr:LDA bladr+1:A
DC#0:STA bladr+1
1900LDA NY%,X:CLC:ADC bpc
1910TAY
1920.agan
1930LDAbladr:CLC:ADC#&40:STAbladr:LDAbl
adr+1:ADC#1:STAbladr+1
1940DEY:CPY#0:BNE agan
1950CPX#0:BNEstop
1960LDAbladr:STAcopy:LDAbladr+1:STAcopy
+1
1970RTS
1980.peeks LDY#0
1990LDAcopy:SEC:SBC#16:STAtmp:LDA copy+
1:SBC#0:STA tmp+1:LDA(tmp),Y:STA l
2000LDA copy:SEC:SBC#&50:STA tmp:LDA co
py+1:SBC#1:STA tmp+1:LDA(tmp),Y:CLC:ADCl
:STA l
2010LDAcopy:CLC:ADC#8:STAtmp:LDAcopy+1:
ADC#0:STAtmp+1:LDA(tmp),Y:STAr
2020LDAcopy:SEC:SBC#&38:STAtmp:LDAcopy+
1:SBC#1:STAtmp+1:LDA(tmp),Y:CLC:ADCr:STA
r
2030LDAcopy:CLC:ADC#&40:STAtmp:LDAcopy+
1:ADC#&1:STAtmp+1:LDA(tmp),Y:STAd
2040LDAcopy:CLC:ADC#&38:STAtmp:LDAcopy+
1:ADC#1:STAtmp+1:LDA(tmp),Y:CLC:ADCd:STA
d
2050LDAcopy:SEC:SBC#&80:STAtmp:LDAcopy+
1:SBC#2:STAtmp+1:LDA(tmp),Y:STAu
2060LDAcopy:SEC:SBC#&88:STAtmp:LDAcopy+
1:SBC#2:STAtmp+1:LDA(tmp),Y:CLC:ADCu:STA
u
2070RTS
2080.GD JSRs:INC NY%,X:JMPs:.GU JSRs:DE
C NY%,X:JMPs:.GL JSRs:DEC NX%,X:JMPs:.GR
JSRs:INC NX%,X:JMPs
2090.movel LDA NXD%,X:CMP#1:BEQ GR
2100CMP#255:BEQ GL
2110LDA NYD%,X:CMP#1:BEQ GD
2120CMP#255:BEQ GU
2130RTS
2140.chklims
2150LDA NXD%,X:BEQ testy
2160LDA NX%,X:CMP LXL%,X:BEQ rx
2170CMP LXR%,X:BEQ rx:RTS
2180.testy
2190LDA NY%,X:CMP LYU%,X:BEQ ry
2200CMP LYD%,X:BEQ ry:RTS
2210.rx ldaNXD%,X:JSRch:staNXD%,X:RTS
2220.ry ldaNYD%,X:JSRch:staNYD%,X:RTS
2230.ch CMP#1:BEQm255:CMP#255:BEQ m1
2240.m255 LDA#255:RTS:.m1 LDA#1:RTS
2250.hitme LDA#0:STA &420:LDY#1:.hlop
2260 LDA NT%,Y:CMP#255:BEQ not
2270LDA NX%:STAx
2280CMP NX%,Y:BEQ xok
2290INCx:LDAx:CMP NX%,Y:BEQ xok
2300LDA NX%,Y:CLC:ADC DX%,Y:SEC:SBC#1:C
MP NX%:BEQxok
2310CMPx:BEQxok
2320.not INY:CPY#11:BNE hlop:RTS
2330.xok
2340LDA NY%:STAy:CMP NY%,Y:BEQ yes
2350INCy:LDAy:CMP NY%,Y:BEQyes
2360INCy:LDAy:CMP NY%,Y:BEQyes
2370LDA NY%,Y:CLC:ADC DY%,Y:SEC:SBC#1:C
MP NY%:BEQ yes
2380CMPy:BEQyes
2390JMPnot
2400.yes LDA#255:STA &420:RTS
2410.scr
2420 LDA&450:STA tmp:CLC:ADC#320 MOD256
:STAapc
2430 LDA&451:STA tmp+1:ADC#320 DIV256:S
TAapc+1
2440LDY#0
2450.alp
2460 LDA(tmp),Y:JSR pout
2470 LDA#1:CLC:ADC tmp:STAtmp:LDA#0:ADC
tmp+1:STA tmp+1
2480 LDAtmp:CMPapc:BNEalp
2490 LDAtmp+1:CMP apc+1:BNE alp
2500RTS
2510.pout TAX:BEQzero
2520CMP#224:BCC les
2530LDA#17:JSR&FFEE:LDA fc-224,X:JSR&FF
EE
2540LDA#17:JSR&FFEE:LDA bc-224,X:JSR&FF
EE
2550.ord TXA:JMP&FFEE
2560.les TAX:LDA#17:JSR&FFEE:LDA#131:JS
R&FFEE:LDA#17:JSR&FFEE:LDA#0:JSR&FFEE:TX
A:JSR&FFEE:LDA#17:JSR&FFEE:LDA#128:JMP&F
FEE
2570.zero LDA#17:JSR&FFEE:LDA#128:JSR&F
FEE:LDA#32:JMP&FFEE
2580.fc EQUB1:EQUB2:EQUB3:EQUB0:EQUB0:E
QUB3:EQUB2
2590.bc EQUB130:EQUB131:EQUB129:EQUB0:E
QUB0:EQUB129:EQUB129
2600.rest LDX#1
2610LDA NT%,X:CMP#255:BEQnosho
2620.olop DEC SC%,X
2630LDA SC%,X:BNE nosho
2640JSRmovel:JSRchklims:LDA SP%,X:STA
SC%,X
```

Turbo-Loader

Simon T Goodwin

Turbo-Loader performs two tasks; it allows programs to be loaded and saved at much higher speeds than is normally possible and it allows the user to protect programs from being copied easily. The increase in speed is achieved by first saving files in one block rather than in multiple blocks, and secondly by using different baud-rate settings. Programs saved using this system cannot easily be copied because I have created a unique header format which cannot be read by Amstrad Basic. Five commands are added to Amstrad Basic to perform this task.

:TSAVE."filename".start address.length. execute address

This saves a chunk of memory under the specified filename. If the code has an execute address then include that address in the command. If it doesn't then the execute address should be specified as zero. The filename must be specified and can be up to 20 characters long. The start address for a basic program is normally 368 (note that basic programs can't be executed directly).

:TLOAD

This loads (and executes if neccessary) the first file it finds on the tape. If all is well the message *"LOADING – [filename]"* should appear. If it doesn't then rewind the tape and try again, perhaps at a different volume setting.

:SPEED baud rate

This sets the baud rate to zero, one or two. Settings zero and one are the usual speed write values. Setting two is a new tape speed (3000 baud) and should not be used for valuable data or on poor quality tapes. As an example of the speed of the 3000 baud rate, a 42K file loads in 1 minute 56 seconds.

:MESSAGES. [0=off.1=on]

Enables or disables tape loading/saving messages. This is particularly useful for loading or saving screen data.

:HELP

Lists the various commands and their syntax.

When *:TSAVE* or *:TLOAD* commands are issued the border will flash momentarily to show that the system is functioning properly. The border will also flash in between the header and main data blocks. If a command is typed wrongly an RSX error command will be displayed. If a file is not read correctly a tape loading error will be displayed. When loading a program the MIC plug should be removed, and the EAR plug should be removed when saving programs.

If readers do not want to type in the machine code listing send £2 (tape) or £5 (disc) to 41 Fountains Drive, Acklam, Middlesbrough, Cleveland TS5 7LW.

```
10 REM ----------------------------
20 REM     TURBO-LOADING SYSTEM
30 REM       by ST Goodwin 1987
40 REM ----------------------------
50 REM
60 count=0
70 MEMORY 41499
80 FOR n=41500 TO 42491
90 READ a$
100 POKE n,VAL("&"+a$)
110 count=count+VAL("&"+a$)
120 NEXT
130 IF count<>99757 THEN PRINT
    "Error in data
    statements":END
140 CALL 41500:REM
    INITALISE COMMANDS
150 END
160 DATA 21,1B,A5,01,1F,A5,C3,D1
170 DATA BC,CD,E3,A3,21,42,A4,06
180 DATA 12,CD,DB,A3,CD,E3,A3,CD
190 DATA 03,A4,C9,FE,01,C2,4B,A2
200 DATA DD,7E,00,FE,00,28,1A,FE
210 DATA 01,28,1F,FE,02,28,24,CD
220 DATA E3,A3,21,38,A4,06,0A,CD
230 DATA DB,A3,CD,E3,A3,CD,03,A4
240 DATA C9,21,4D,01,3E,19,CD,68
250 DATA BC,C9,21,A7,00,3E,32,CD
260 DATA 68,BC,C9,21,6E,00,3E,0F
270 DATA CD,68,BC,C9,FE,01,C2,4B
280 DATA A2,DD,7E,00,FE,01,28,07
290 DATA FE,00,28,09,C3,4B,A2,3E
300 DATA 01,32,1A,A5,C9,3E,00,32
310 DATA 1A,A5,C9,CD,E3,A3,21,5D
320 DATA A4,06,11,CD,DB,A3,CD,E3
330 DATA A3,06,14,CD,DB,A3,CD,E3
340 DATA A3,CD,E3,A3,21,82,A4,06
350 DATA 14,CD,DB,A3,CD,E3,A3,CD
360 DATA E3,A3,06,2B,CD,DB,A3,CD
370 DATA E3,A3,06,17,CD,DB,A3,CD
380 DATA E3,A3,06,1C,CD,DB,A3,CD
390 DATA E3,A3,06,17,CD,DB,A3,CD
400 DATA E3,A3,CD,E3,A3,C9,FE,04
410 DATA C2,4B,A2,CD,EE,A3,21,0A
420 DATA A4,06,1E,3E,00,77,10,FD
430 DATA DD,6E,06,DD,66,07,7E,32
440 DATA 24,A4,FE,00,CA,4B,A2,FE
450 DATA 14,38,03,C2,4B,A2,23,7E
460 DATA 5F,23,7E,57,EB,11,10,A4
470 DATA 01,14,00,ED,B0,3A,1A,A5
480 DATA FE,00,28,2B,21,5D,A4,06
490 DATA 11,CD,DB,A3,CD,E3,A3,06
500 DATA 14,CD,DB,A3,CD,E3,A3,CD
510 DATA E3,A3,06,09,21,25,A4,CD
520 DATA DB,A3,3A,24,A4,47,21,10
530 DATA A4,CD,DB,A3,CD,E3,A3,DD
540 DATA 6E,04,DD,66,05,DD,5E,02
550 DATA DD,56,03,DD,4E,00,DD,46
560 DATA 01,22,0A,A4,ED,53,0C,A4
570 DATA ED,43,0E,A4,21,0A,A4,11
580 DATA 1E,00,3E,16,CD,9E,BC,D2
590 DATA 4B,A2,2A,0A,A4,ED,5B,0C
600 DATA A4,3E,16,CD,9E,BC,D2,4B
610 DATA A2,CD,03,A4,C9,FE,00,C2
620 DATA 4B,A2,CD,EE,A3,21,0A,A4
630 DATA 06,1E,3E,00,77,10,FD,21
640 DATA 0A,A4,11,1E,00,3E,16,CD
650 DATA A1,BC,D2,25,A2,3A,1A,A5
660 DATA FE,00,28,12,21,2E,A4,06
670 DATA 0A,CD,DB,A3,21,10,A4,3A
680 DATA 24,A4,47,CD,DB,A3,2A,0A
690 DATA A4,ED,5B,0C,A4,3E,16,CD
700 DATA A1,BC,D2,25,A2,CD,03,A4
710 DATA 2A,0E,A4,7C,B5,C8,E9,7E
720 DATA CD,5A,BB,23,10,F9,C9,3E
730 DATA 0D,CD,5A,BB,3E,0A,CD,5A
740 DATA BB,C9,21,54,A4,C3,E3,BC
750 DATA 06,7F,0E,10,ED,5F,E6,11
760 DATA F6,40,ED,49,ED,79,C9,21
770 DATA 54,A4,CD,E6,BC,C9,00,00
780 DATA 00,00,00,00,00,00,00,00
790 DATA 00,00,00,00,00,00,00,00
800 DATA 00,00,00,00,00,00,00,00
810 DATA 00,53,41,56,49,4E,47,20
820 DATA 3A,20,4C,4F,41,44,49,4E
830 DATA 47,20,3A,20,52,53,58,20
840 DATA 45,52,52,4F,52,21,54,41
850 DATA 50,45,20,4C,4F,41,44,49
860 DATA 4E,47,20,45,52,52,4F,52
870 DATA 00,00,00,00,00,81,F4,A3
880 DATA 00,54,55,52,42,4F,20,4C
890 DATA 4F,41,44,45,52,20,76,31
900 DATA 2E,30,53,69,6D,6F,6E,2E
910 DATA 54,2E,47,6F,6F,64,77,69
920 DATA 6E,20,31,39,38,37,54,68
930 DATA 65,20,63,6F,6D,6D,61,6E
940 DATA 64,73,20,61,72,65,20,3A
950 DATA 20,20,7C,54,53,41,56,45
960 DATA 2C,22,66,69,6C,65,6E,61
970 DATA 6D,65,22,2C,73,74,61,72
980 DATA 74,20,61,64,64,72,65,73
990 DATA 73,2C,6C,65,6E,67,74,68
1000 DATA 2C,65,78,65,63,7C,54,4C
1010 DATA 4F,41,44,20,20,5B,6E,6F
1020 DATA 20,70,61,72,61,6D,65,74
1030 DATA 65,72,73,5D,7C,53,50,45
1040 DATA 45,44,2C,74,61,70,65,20
1050 DATA 73,70,65,65,64,20,5B,30
1060 DATA 2C,31,2C,6F,72,20,32,5D
1070 DATA 7C,4D,45,53,53,41,47,45
1080 DATA 53,2C,20,5B,31,3D,6F,6E
1090 DATA 2C,30,3D,6F,66,66,5D,28
1100 DATA 63,29,53,54,47,20,4D,61
1110 DATA 72,63,68,20,38,37,01,00
1120 DATA 00,00,00,30,A5,C3,E2,A2
1130 DATA C3,89,A3,C3,37,A2,C3,97
1140 DATA A2,C3,78,A2,54,53,41,56
1150 DATA C5,54,4C,4F,41,C4,53,50
1160 DATA 45,45,C4,48,45,4C,D0,4D
1170 DATA 45,53,53,41,47,45,D3,48
1180 DATA 65,6C,6C,6F,20,48,61,63
1190 DATA 6B,65,72,21,21,20,53,6F
1200 DATA 20,79,6F,75,20,74,68,69
1210 DATA 6E,6B,20,79,6F,75,20,63
1220 DATA 61,6E,20,68,61,63,6B,20
1230 DATA 74,68,69,73,20,64,6F,20
1240 DATA 79,6F,75,3F,3F,4C,65,74
1250 DATA 20,6D,65,20,74,65,6C,6C
1260 DATA 20,79,6F,75,20,6E,6F,77
1270 DATA 2E,2E,2E,79,6F,75,20,68
1280 DATA 61,76,65,6E,27,74,20,67
1290 DATA 6F,74,20,61,20,63,68,61
1300 DATA 6E,63,65,2E,49,66,20,79
1310 DATA 6F,75,20,63,61,6E,20,6F
1320 DATA 66,66,65,72,20,61,6E,79
1330 DATA 20,69,6D,70,72,6F,76,65
1340 DATA 6D,65,6E,74,73,20,74,6F
1350 DATA 20,74,68,65,20,70,72,6F
1360 DATA 67,20,77,72,69,74,65,20
1370 DATA 61,6E,64,20,74,65,6C,6C
1380 DATA 20,6D,65,2E,00,00,00,00
1390 DATA 00,00,00,00,00,00,00,00
```

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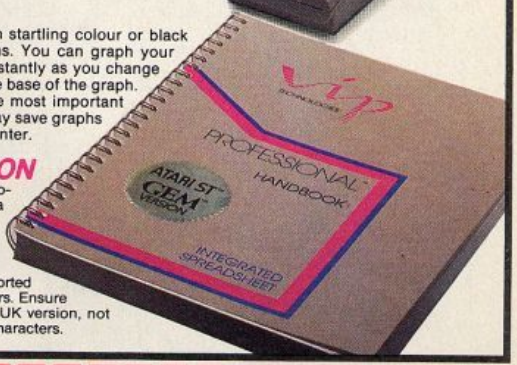

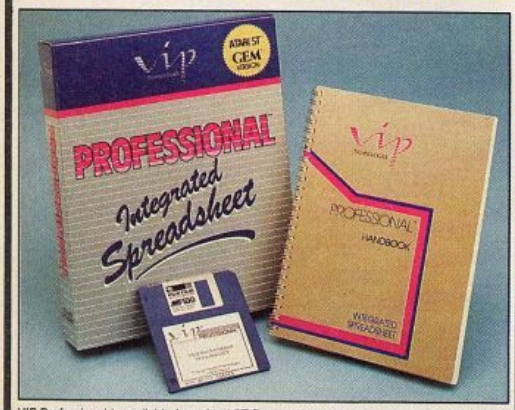

VIP Professional is available from Atari ST Dealers throughout the UK. If your local dealer does not have VIP in stock, it can be obtained by mail order (P&P free) from:

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Starscroll

Andrew Partridge

The following C64 routine will generate an eight sprite starfield which will scroll from right to left under interrupt.

```
10 SE =  49152 :EE =  49288
20 :
30 FORI = SE TO EE : READ A : POKE I , A : NEXT
40 :
50000 DATA 169,255,141,021,208,169,060,160,000,153,000,208,200,170
50001 DATA 232,232,232,232,232,232,232,232,138,192,014,208,238,120
50002 DATA 169,064,141,020,003,169,192,141,021,003,088,169,013,160
50003 DATA 000,153,248,007,200,192,008,208,248,169,003,141,064,003
50004 DATA 096,000,000,000,000,000,000,206,000,208,206,002,208
50005 DATA 206,002,208,206,004,208,206,004,208,206,006
50006 DATA 208,206,008,208,206,008,208,206,008,208,206,008,208,206
50007 DATA 010,208,206,010,208,206,012,208,206,012,208,206,014,208
50008 DATA 206,012,208,206,000,208,206,002,208,206,002,208,206,040
50009 DATA 208,206,043,208,206,046,208,076,049,234,000

READY.
```

Paddle Read

Adam Wright

This short machine code routine for the Commodore 64 will read the position of the paddle ports 0–3.

The syntax of the command is *SYS 49152, paddle no, variable to return position in.*

```
0 REM PADDLE READER
1 DATA 32,253,174,32,138,173,32,247
2 DATA 183,165,20,201,4,144,3,76
3 DATA 72,178,168,162,64,41,2,240
4 DATA 2,162,128,120,142,0,220,162
5 DATA 128,202,16,253,152,41,1,170
6 DATA 188,25,212,88,169,0,32,145
7 DATA 179,32,253,174,32,139,176,166
8 DATA 13,240,3,76,72,178,170,32
9 DATA 212,187,96
10 PR=49152:CK=0:FOR A=PR TO PR+66
20 READ D:POKE A,D:CK=CK+D:NEXT A
30 IF CK<>7992 THEN PRINT "ERROR":STOP
40 SYS PR,0,P:PRINT P

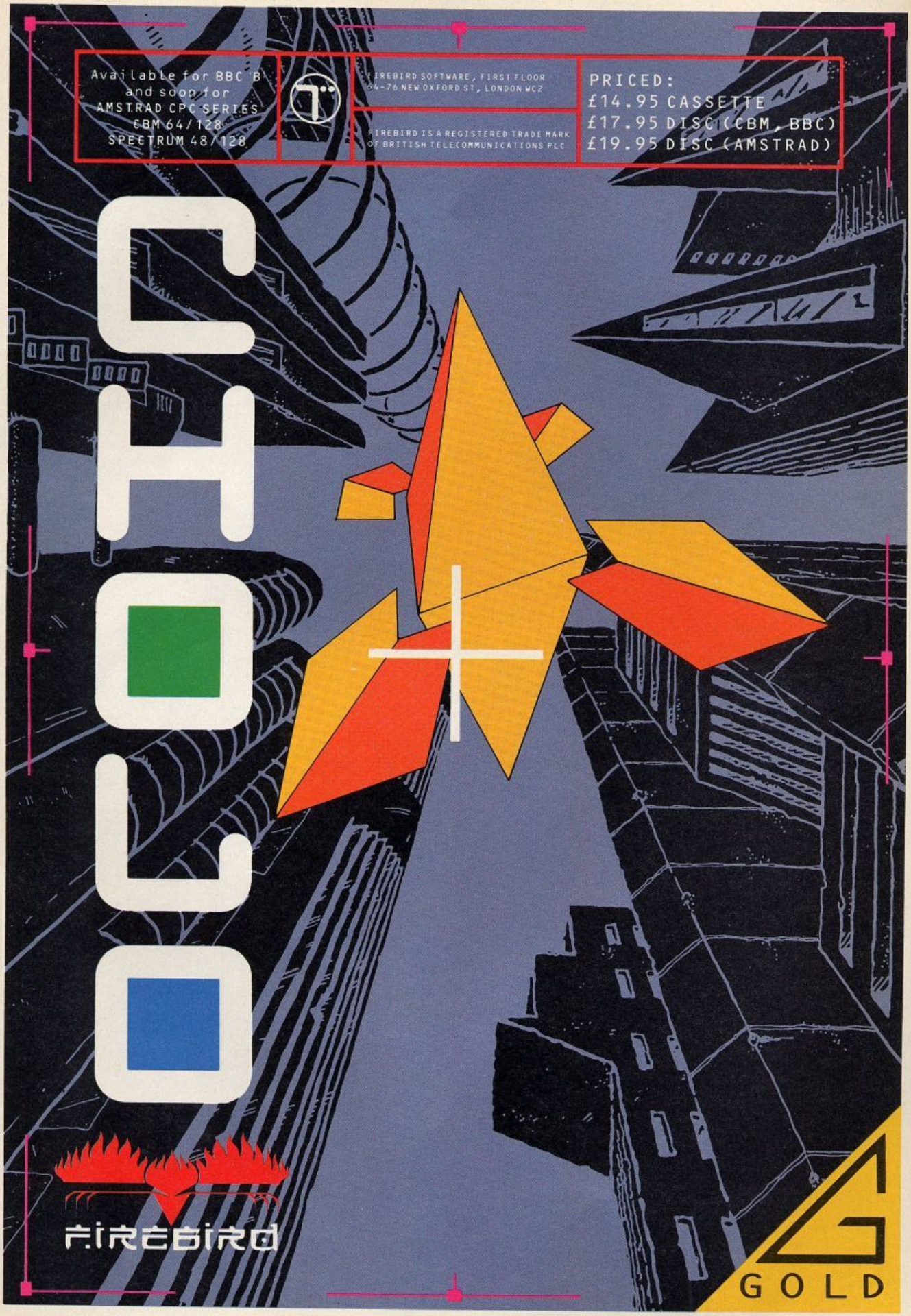
READY.
```

Screen Collapse

Simon T Goodwin

This routine for any Amstrad CPC provides a spectacular way of clearing the screen. It can be used in all screen modes and is executed by typing *Call 42400*. Lines 90–110 give a simple demonstration of the routine.

```
10 REM --------------------------------
20 REM  SCREEN COLLAPSE by ST Goodwin
30 REM --------------------------------
40 REM
50 MEMORY 42399
60 FOR n=42400 TO 42463
70 READ a$:POKE n,VAL("&"+a$)
80 NEXT
90 MODE 1:INK 3,6:PAPER 3:CLS
100 FOR n=1 TO 25:PRINT "Collapsing screen":NEXT
110 CALL 42400
120 DATA 06,28,78,32,D0,A5,C5,06
130 DATA 0F,CD,19,BD,10,FB,3A,D0
140 DATA A5,57,01,00,BC,0E,01,ED
150 DATA 49,04,ED,51,05,C1,10,E2
160 DATA CD,6C,BB,01,00,BC,16,28
170 DATA 0E,01,ED,49,04,ED,51,C9
180 DATA 00,00,00,00,00,00,00,00
190 DATA 00,00,00,00,00,00,00,00
```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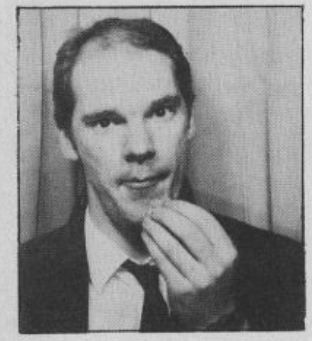

with Kenn Garroch

Switching the DIP

Steve Bashforth of Grimsby, S Humberside, writes:

Q I have recently bought an Epson P-40 printer. I was supplied with an interface that has printed on it: QL Centronics Printer Interface

My problem is that all of the printer commands work with the exception of COPY, which sort of works. What happens is that it will print a line of the screen, and then print a line of spaces, and so on. I was wondering if it would be possible to print the screen using the LPRINT command.

A This looks like a problem with the DIP switch settings, or the cable. What appears to be happening in the example you sent me (not reproduced here), is that the computer is sending an extra, unnecessary, line feed at the end of each line.

Epson printers, in fact any printer with a Centronics interface, uses one of two methods to get to the start of the next line. One of these is to send a carriage return (ASCII 13) and a line feed (ASCII 10) to the printer telling it to return to the start column, and then move the paper up one position.

The other method is to send a carriage return only, leaving it up to the printer to insert the line feed. What appears to be happening in your case is that the first method is being used whether the printer expects the second hence the extra line feed.

The solution is to alter the DIP (Dual Inline Package) switches which change the way in which the computer interprets control codes sent to it. You will have to consult your printer manual to find out which switch needs to be altered. It is usually labelled something along the lines of 'Line feed must be from host'. Just put this switch in the opposite position.

If the above solution does not work, then the cable is probably causing the problem. In the Centronics specification, there is one connection entitled Auto line feed XT (line 14 on the printer socket).

If this is set high then a line feed is inserted by the printer on receipt of a carriage return. What you need to do is disconnect this line and then reset the DIP switch if necessary. The Auto line feed XT effectively overrides the switch setting and is redundant for most computer systems.

Poking on Commodore

Peter Lam of Rochdale, Lancs, writes:

Q Please could you tell me the poke to disable the Run/ Stop Restore and prevent listing on the Commodore Pet?

A For the Commodore 64, there are a couple of methods of disabling Run/Stop Restore. To get the same thing to work on the Pet will require you getting hold of a memory map that shows the various vectors, in particular, the Stop vector. This is at location 808 on the 64 and the following poke disables the R/S Restore and mucks up the list command.

```
POKE 808,234    Disable
POKE 808,237    Enable
```

The only drawback is that the tape operations may be messed up, but if you use this poke after the program is loaded then there should be no problems.

Running in circles

G Martin of Royton, Lancs, writes:

Q This may sound a little trivial, but I was wondering if you could tell me how to draw circles on my Amstrad computer.

A The easiest way to draw circles is to use the SIN and COS functions provided in Basic. These take values from 0 to 2*π and convert them in the appropriate values for drawing circles and ellipses. In the following program, the variables PX and PY define the centre of the circle, and the variables SPX and SPY define the aspect ratio and size. To flatten the circle, reduce SPX and to widen it, increase SPY. For perfect circles, SPX and SPY should be equal.

Line 50 is used to move the cursor to the start position, in this case the top centre, of the circle. This position is defined when the angle T = 0 and since SIN(0) = 0 and COS(0) = 1, it is MOVE PX,SPY+PY. Changing the step amount in line 60 makes the circle finer or coarser, it also causes it to be drawn faster or slower. The best value for this depends on how fast you want your circle drawn traded off against the quality of the circle.

```
10 PX=100
20 PY=100
30 SPX=50
40 SPY=50
50 MOVE PX,SPY+PY
60 FOR T=0 TO 2*PI STEP .1
70 DRAW
   SIN(T)*SPX+PX,COS(T)*SPY+PY
80 NEXT
```

Sorting out the database

H Stevens of Hull, North Humberside, writes:

Q I am writing a database for my computer and would like to sort the information in order. I know that sorting should be easy on a computer. The trouble is the only ways I can think of doing it are quite slow. Are there other methods of sorting that are faster?

A There are three fairly simple sorts that can easily be implemented on a micro. These are the bubble sort, the Shell Metzner sort, and the pick or exchange sort. Of these, the most efficient for long random lists is the Shell Metzner (named after its authors).

For lists that are almost in order, the bubble sort is usually the best. If, however, you only want to find say, the top 10 items in the list, ignoring the others, the pick sort is best. The following listings should be adaptable

```
'Shell Metzner sort
SM:
L1%=L%
SM1:
L1%=INT(L1%/2)
IF L1%=0 THEN fin
FOR L2%=0 TO L1%-1
SM2:
SFG%=0
P1%=L2%:P2%=L2%+L1%
SM3:
IF N%(P1%)<N%(P2%) THEN
SWAP N%(P1%),N%(P2%):SFG%=1
P1%=P2%:P2%=P2%+L1%
IF P2%<1%+1 THEN SM3
IF SFG%<>0 THEN SM2
NEXT
GOTO SM1
fin:
RETURN

'BUBBLE SORT
BSORT:
SFG%=0
FOR T%=0 TO L%-1
IF N%(T%)<N%(T%+1) THEN
 SWAP N%(T%),N%(T%+1):SFG%=1
NEXT
IF SFG%=1 THEN BSORT
RETURN

'Pick sort Exchange sort
PSORT:
FOR T%=0 TO L%-1
P%=L%
FOR S%=T% TO L%
IF N%(P%)<N%(S%) THEN P%=S%
NEXT
IF P%<>T% THEN SWAP N%
(P%),N%(T%)
NEXT
RETURN

Ends...
```

Is there anything about your computer you don't understand, and which everyone else seems to take for granted? Whatever your problem *Peek* it to Kenn Garroch and every week he will *Poke* back as many answers as he can. The address is *Peek & Poke, PCW*, 12-13 Little Newport Street, London WC2H 7PP.

to work on any computer.

All are sorting the array N% whose length is in L%. The programs were written in Microsoft Basic (on a Mac). Just insert line numbers and change references to the labels (anything ending in a colon) to be line numbers.

The Dynamic Debugging Tool

Alun Jones of Buckley, North Wales, writes:

Q I have an Amstrad CPC 664 and have been experimenting with CP/M. What I would like to know is what is DDT?

A DDT or the Dynamic Debugging Tool is a programming utility that allows programs to be studied, altered and created. DDT, unlike most other CP/M programs, is not loaded at $100, it is loaded at the top of the memory so that other programs can be loaded further down, and debugged.

DDT has the following commands:

Assss: The assembler function allows programs to be typed in in mnemonic form. Simply type A followed by the address (in hex) where the code is to be assembled. See example below.

```
A100
100 MVI C,2
102 MVI E,41
104 call 5
107 ret
106
```

To get out of the assembler just press return at the next line. The assembler uses 8080 mnemonics even though the 664 is a Z80 machine.

Dssss,eeee: D is followed by the starting address (in hex) and dumps 256 bytes of memory in hex and ASCII to the screen. If you put a second address following the first, only the section specified is dumped.

Fssss,eeee,ww: Fills the section of memory from ssss to eeee with the byte specified in ww.

Gssss[bbbb[,bbbb[,bbbb]]]: Jump to the address specified in ssss and start executing code from there. G is also used to set breakpoints within a program where execution will stop and control is returned to DDT. The address of the breakpoint is at bbbb and if you need more than one just tag them on the end. GO returns control back to CP/M leaving DDT.

Hnnnn,mmmm: Returns the sum and difference of mmmm and nnnn in hexadecimal.

Innnnnnn.ext: Used to insert a file name in the file control block (FCB) starting at location 5C. The program can be loaded with the R command.

Lssss[,eeee]: Disassembles code starting from ssss.eeee is an option end address which, if not used, assumes 12 lines of instructions. If a start address is not specified, L starts from the correct address.

Mssss,eeee,dddd: Move a section of memory starting at ssss and ending at eeee to the location starting at dddd.

R[oooo]: Reads a file into memory using the name specified using the I command. An option is to load the program offset by oooo bytes.

Sssss: Allows the memory starting at ssss to be edited as numbers. Pressing return moves to the next address, typing in a new value inserts this value at the location specified, a full stop is used to terminate the command.

Tnnnn: T is used to trace the execution of a program for nnnn instructions. The contents of the internal registers are printed to the screen in the following way:

Flags, A, BC, DE, HL, SP, PC, disassembled instruction code.

The flags are represented by C=carry, Z=zero, m=minus, E=even parity, I=integer carry.

Unnnn: This performs the same as Trace except that there is no output. It is useful when you want to skip over a nnnn instructions before starting to trace the program.

Xr: The processor registers can be examined and edited by using X followed by the register you want to see. Typing in a new value sets the register to that value. r, the register is specified by the following letters:

A	A register	O-FF
B	BC registers	O-FFFF
C	DE registers	O-FFFF
H	HL registers	O-FFFF
S	Stack pointer	O-FFFF
P	Prog counter	O-FFFF
M	Minus flag	O-1
C	Carry flag	O-1
Z	Zero flag	O-1
E	Parity flag	O-1
I	Aux carry	O-1

DDT is loaded by typing DDT at the prompt A> If you follow DDT with a filename (A>DDT FILE.EXT then the file will be loaded into along with DDT.

No cartridge required

Robert Platt of Kinson, Bournemouth, Dorset, writes:

Q With reference to your reply to the letter from M Hopkins (*Popular* 3–9 April) the TI 99/4A does not need any cartridge to load the operating system as it is built in. As to the problem of the black screen, it would appear that there is something wrong with the internal workings of the computer.

A My thanks also go to A V Vere of Leamington Spa for informing me that no cartridge is needed for Basic. He also says that on boot up, the display shows all the available colours in the top strip, the bottom strip contains the TI logo, Texas Inst. Home Comp., press any key, and 1981 Texas Instruments on a Grey/Green background.

Wedge in the 64

Mike Davis of Norwich, Norfolk, writes:

Q I have been using my Commodore 64 for some years now and have just become interested in machine code programming. I have an assembler and would like to add extensions to Basic. Could you explain how this is done?

A The idea you refer to is known as Wedging, on the 64. What you do is intercept characters read in and check them against new commands. The simplest way of doing this is to make all of your commands start with an unused letter such as I. Thus, you only need to check for this, anything else is either a valid command or a mistake.

To insert a wedge, you need to redirect the CHRGET routine to your own. This is done in the wedge setup at the start of the program. Once you have the wedge installed, you need to imitate CHRGET as far as the current character pointer is concerned ($/A/B) and check the character being read. If this is not your wedge character then jump to the normal Basic handler. If it is your character then check next char and perform the specific your routine and then return to the normal Basic handler. The following program demonstrates how this is done.

```
START   LDA #$4C        ;Jump command
        STA $73         ;To address as follows
        LDA #<WEDGE     ;Get address of wedge
        STA $74         ;to the next
        LDA #>WEDGE     ;Locations $73/74
        STA $75         ;In low hi format
        RTS             ;To install wedge SYS START
WEDGE   JSR GCHAR       ;Get the character
        CMP #33         ;Is it a I
        BEQ DA
NIET    JMP $79         ;No so don't use wedge
DA      LDA $9D         ;Are we in direct mode?
        BNE NIET        ;Use within prog only
        JSR GCHAR
        CMP #65         ;IA command?
        BEQ CMA         ;Is a command A
        CMP #66         ;IB command?
        BNE NIET        ;Neither
CMA     TXA             ;Save all regs
        PHA
        TYA
        PHA
        INC 53280       ;Execute IA command Border flash
        PLA
        TAY
        PLA
        TAX
        JMP $73         ;Continue Basic
CMB     TXA             ;Save all regs
        PHA
        TYA
        PHA
        INC 53281       ;Execute IB command BG flash
        PLA
        TAY
        PLA
        TAX
        JMP $73         ;Continue Basic
GCHAR   INC $7A         ;Move char pointer
        BNE SKP         ;Two byte inc
        INC $7B
        JSR $79         ;Get character
        RTS
END
```

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Budget packages for budget synths

Sound creation on budget-oriented synthesisers should logically be available at a budget price. Here Mark Jenkins reviews Soundbits *Voice Master*, which serves just that purpose

This week we're looking at the first release from a new UK software company called Soundbits. It has just signed an exclusive distribution deal with Syndromic Music, which already handles Hybrid Arts' lines which include the basic *EZ-Track* composer, the professional *SyncTrack/SMPTETrack* composers, the *CZ-Android* editor for the Casio synths and the *DX-Android* editor for the Yamaha DX7 synth.

Soundbits, however, has started off by addressing a problem not touched upon by Hybrid as yet, and that is sound creation on the more budget-oriented Yamaha DX21, DX27 and DX100 synths. There are other editors for these machines – I've recently looked at one from Dr T which also copes with the FB-01 synth module and which costs £120 – but the Soundbits package, *Voice Master*, costs only £49.95.

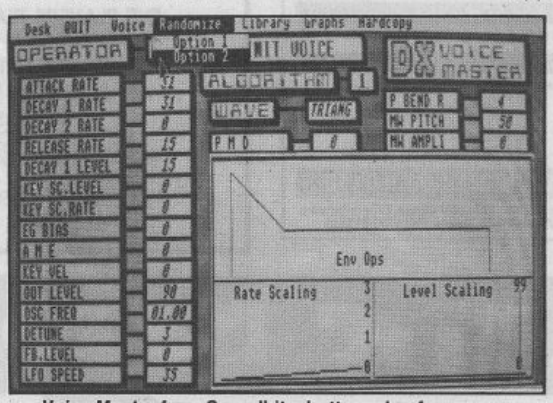
The display on the Soundbits package is clear and straightforward, using the Gem graphics environment in a simple, chunky manner. The main screen simply lists all the parameters available on the synth, including all the possible algorithms (arrangements of sine wave oscillators), all the envelope stages and speeds, all the LFO parameters for vibrato and other special effects.

It's a good display, not especially illuminating, but at least the package will immediately transmit any changes you make to the connected synth for you to hear their effect.

If you choose Graphic from the top-of-the-screen menus you're given a graphic display of the current envelope and of the keyboard scaling functions. These give a good idea of the overall 'shape' of the sound and although you can't drag sections of the envelope around as on the Dr T package, you can at least see the effects of the changes you've made in a very immediate form.

The envelope displays really come into their own when you use either of the two Randomiser functions. Randomise Option 1 seems to change minor details in the sound, usually keeping the basic algorithm (arrangement of sine wave generators) the same, whereas Randomise 2 is likely to change almost any parameter.

Obviously you're presented with a mixture of very exciting sounds, some more musical than others, and some which need a little tweaking – once you've got to know your synth quite well this isn't a problem, although it's a pity that the package doesn't offer some of the "masking" function of the Dr T which make certain parameters immune from randomisation.



***Voice Master* from Soundbits: better value for money**

The only other main display is the Librarian page, which shows two banks of 32 sounds of which only the first 24 will be relevant to the DX100. This page allows you to transfer single sounds or whole banks between synth and computer, and if you drag a sound down to the Transfer Window it will be transferred to the Edit section for you to work on when you hit Exit. All the sounds are named as on the synths themselves and the relevant name goes along with the sound into the Workbank when you use Transfer.

You can initialise a voice to a basic sine wave whine and of course can alter any parameter using the mouse, within the limitations of the settings available on the synth itself. Like the other editors we've looked at, *Voice Master* does nothing you couldn't do with the synth alone and a bit of patience, but it does it a hundred times quicker and then stores the results to nice, cheap, reliable floppy discs.

Overall *Voice Master* does its job simply and well. It's not too expensive either, and versions for the powerful TX81Z synth module and Roland Alpha Juno 1 and 2 synths (and presumably their expander version) are on the way.

Just time for a couple of quick letters. Mark Sampson of Strathclyde has a 48K Spectrum with a Micon Midi interface and has just bought a CZ101. He asks, do you need separate software packages to create and store sounds and to edit sequences?

The answer here is yes, simply because every synth alters and stores sounds in a different format and so it's impractical to write a sequencer package which also happens to have the editing and storage facilities for any synth you're likely to own. XRI, the manufacturers of the Micon interface, do very effective editing and sequencer packages.

He also wants to know where you get a CZ101 for £230, since he paid £295 for his? Well, you look in the second-hand columns of *Music Technology* or *Melody Maker*, go and visit your intended victim (a bit difficult if none of them lives in the direction of Strathclyde admittedly), and then you can even try to beat them down a bit.

John Magee of Barry has a Toshiba MU109 music system, which he describes as "brilliant" and which he's used to play a few "one-finger" tunes. His problem is that he can't read music and that he can't play with both hands without the fingers copying each other.

There are several good tutor books about which will give you very simple exercises to begin to make your left and right hands a bit more independent; any music shop will show you a selection. The other alternative is to have a few piano lessons until you gain enough confidence to go out on your own.

Lastly, you can nip into your local WH Smith's and look for a cassette/magazine series called *How to Play Electric Keyboards*, or something similar. It's an easy-going partwork with musical examples which is exactly suited to someone who wants a basic keyboard facility without having to turn into Rick Wakeman overnight.

If you have any queries or tips for this column, please write to Mark Jenkins at *Popular Computing Weekly*, 12–13 Little Newport Street, London WC2H 7PP. Mark would also welcome examples of your own music on audio or program tape, or disc.

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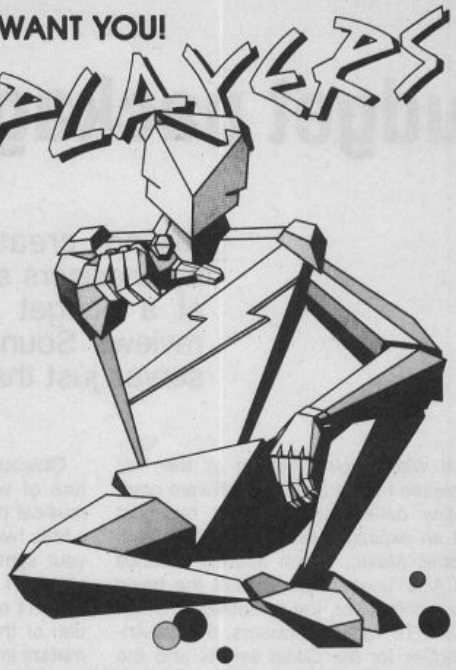

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Mention electronic mail, Email for short, and most people think of telex machines clattering away. Whilst Email services do provide low-cost access to the telex network, more and more companies are linking into Email, owing to its larger character set, and more modern services.

Here, Steve Gold looks at one of brand leader Telecom Gold's competitors and assesses its facilities against BT's service.

Whilst the 'brand leader' in Email is Telecom Gold, with its 60,000 plus subscribers, there are, as with any competitive market, other alternative Email service vendors, all keen for your business.

Message Handling System (MHS for short) is currently being beta tested by several Email companies, prior to its introduction this summer. Once implemented, MHS will allow a user on one Email system to send mail to users on other Email systems. MHS will, in many ways, remove the barriers between the systems and, its proponents argue, make for a much wider customer base than before, quickly attracting the 'critical mass' required for mass sign-ups by firms and the public at large.

One To One

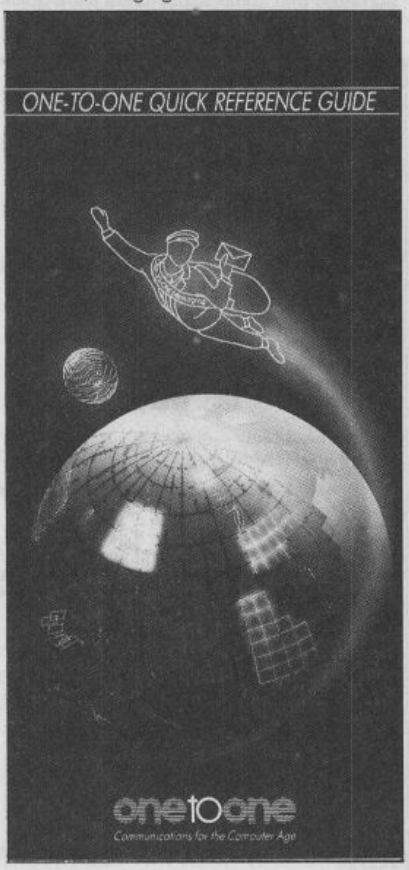
With currently just over 16,000 subscribers, One To One is a wholly owned subsidiary of Pacific Telesis. As such, it enjoys a healthy investment of capital from its parent company in the US, which has resulted in the recent installation of new Tandem 'Non-Stop' computers at its London HQ.

What advantages does One To One offer over Telecom Gold? During office hours it's marginally cheaper – both on telex and connect time. Dial-up access is 10 pence per minute, as opposed to 11 pence per minute for Gold. Off-peak access, however, is priced at the same rate at daytime access.

As a plus, the first 30 seconds of access to One To One, via direct dial or PSS, the public data network, is free of charge. Normal charges only accrue once the free time is up on each call. This time allows subscribers to check their mailbox as frequently as they wish with no extra charges. A radiopaging option is available for express messages.

Another plus in One To One's favour is means of access. Like Telecom Gold, One To One is accessible via the PSS – Packet Switch Stream – which is available on local call access to much of the population. Direct dial access is available at the same speeds as PSS, ie, 300/300, 1200/75 and 1200/1200 baud.

Unlike Gold, however, a variety of dial-up ports are available on London Phone numbers, ranging from viewdata format



(Prestel) access, Cellular (1200 baud) and 300/600 baud textlite. Access can also be achieved via a standard telex terminal from almost anywhere in the world.

For those with with more mobile requirements, One To One is also available on local access in North America via the Telenet System – at no extra charge – an added bonus for firms and/or individuals requiring cheap communication facilities between the US and UK.

As one might expect, the usual Email facilities are available on One To One – text-based mail to other mailboxes, telex bureau service (incoming and outgoing), radiopaging on receipt of Email, etc.

Additional services

Additionally, two other mail services are provided by One To One. The first – Priority Letter – allows subscribers to input a letter electronically via their terminal and, for 58 pence plus postage, have their letter printed out at One To One's London HQ for posting first class/airmail to anywhere in the world.

Whilst this may appear a superfluous service, it does allow non-provincial subscribers to give their hardcopy mail a 'leg-up' to international and certain UK destinations. Mail sent via priority letter service invariably arrives the next day (excluding Sundays) in London when 'posted' during office hours, and can prove useful if you have no letters or stamps to get that last minute letter off in the night's post.

The second additional service that One To One provides is called Courier Letter. For the sum of £12.00 per consignment, the firm will deliver a hardcopy letter to any London destination within two, and to several of the provinces and their localities within four business hours. In some ways the courier mail option replaces the old telegram service which was superseded by the Telemessage overnight service – which is what the Post Office's first class mail should be able to do anyway.

Gateway access

One To One offers gateway access to other online databases, including its own free online bulletin board, called One To One World and Advance Information, a company and online credit-checking databases. The

continued on page 48 ▶

◀ continued from page 47

Al database costs £1.25 a minute to access, compared with £2.00 a minute charged by Telecom Gold for its Jordanwatch service.

Such charges may appear high to the average user, but compared to the cost of searching through the library for company information, a two minute search for company records, etc, works out quite economically.

Like Telecom Gold, One To One has an online directory and a noticeboard facility with several options, covering a plethora of subjects via a tree-like category structure.

> *"The first 30 seconds of access to One on One, via direct dial or PSS, the public data network, is free of charge"*

Messages may be left and read at will in a manner reminiscent of certain bulletin boards I have been on to. Hardly surprising, in view of the fact that the '121 World' noticeboard was written by a BBS user.

Storage Charges

Regular users of Telecom Gold will be aware that even if they have no storage 'blocks' on their mailbox, they will charged at least 20 pence per month for notional storage. The storage charges increase in direct proportion to the text stored on a Gold mailbox.

One To One, on the other hand, does not charge for storage and, whilst its mail storage facilities are not as comprehensive as Telecom Gold's, they are more than adequate for most users. Under the new Tandem computer system the service is running on, two distinct file areas – New Mail and Old Mail are created for each subscriber.

New Mail, as the name implies, is for mail which has not yet been read. If mail is not read within 30 days then the service will print out the text and deliver it hardcopy via priority letter. This compares with the Telecom Gold system of automatically storing (and charging for) mail more than 30 days old.

Old Mail is that mail which, having been read, remains in your box if not deleted. Once old mail is more than four days old, it is deleted by the system to minimise mail storage.

User Support

Most Telecom Gold subscribers have access to varying levels of support. Some, like MicroLink subscribers, have access to a telephone and Email hotline during business hours. Others, notably corporate customers, may call the Telecom Gold 24 hour hotline in London – a trunk call for most subscribers.

One To One's control centre has a telephone hotline service available on a Linkline (0800) number free of charge and is manned 24 hours a day, 365 days a year – even throughout Christmas, something even Telecom Gold's hotline shuts down for. In addition, customers may send Email to the control room and will usually get a reply in a short while, no matter what time of day it is.

Conclusions

The choice between Telecom Gold and One To One is a little more difficult than it may seem at first glance. Currently, Telecom Gold offers the advantage of larger customer base but, once MHS is implemented, this advantage disappears.

The 24-hour user support via a free Linkline number does count very strongly in One To One's favour, however, as does the fact that the first 30 seconds spent online in each call is free.

In fact, in a recent edition of BBC TV's *Micro Live*, One To One's Roger Dean admitted that some subscribers were quick enough to read their mail and log off within this free period, thereby minimising their costs considerably.

For the majority of Email users, however, the free telephone support and free 30 seconds initial online time will positively contribute to a reduction in telephone and Email costs. Coupled with minimum billing of £5.00 per month and One To One begins to look very attractive.

Further details from: One To One, Scorpio House, 102 Sydney Street, Chelsea, London SW3 6NL, 01-351 2468 or LinkLine 0800-800-121.

```
SERVICE COSTS FOR ONE-TO-ONE
----------------------------

Registration Fee:              £50-00

(Note - some special offers are available with
 free registration from many dealers)

Minimum Monthly Invoice:       £5-00

Connect Time: 1st 30 seconds free,
              thereafter 10p per minute

PSS access:   3p a minute

TELEX:  UK              10p / 200 characters
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        Rest of World   75p / 200 characters

Priority Letters:   58p/first page of 1000 characters,
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Courier Letter:     £12-00 per consignment
```

```
SAMPLE LOGIN FROM 121 VIA PSS
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NUI?
NONEONE-A212301281


234212301281+COM

WELCOME TO ONE-TO-ONE
PLEASE ENTER YOUR MAILBOX NUMBER AND YOUR PASSWORD

MAILBOX?: 14035001

PASSWORD?:

WELCOME 14035001. YOU ARE LOGGED ON AT 12 MAR 87 21:40 GMT

LAST LOGGED ON AT 12 MAR 87 17:39 GMT

Unread messages:  0 TELEX   1 E-MAIL
(oldest message: 0 days 2 hours)

AT GO AHEAD PROMPT ENTER COMMAND (EG SEND, READ, HELP, LIST)...

GA:LIST

1 MESSAGES IN NEW-MAIL FOLDER...
MSG      DATE/TIME RCVD GMT    CHARS  FROM            SUBJECT
1   E-M  THU 12 MAR 87 19:39   26     14035001        Meeting at 9:30am

+++ LIST END

GA:read 1

NEW-MAIL FOLDER...
MSG     REF        DATE/TIME RCVD GMT    CHARS  FROM            DATE/TIME READ
1   E-M 0817340A   THU 12 MAR 87 19:39    26     14058001        12 MAR 87 21:40

SUBJECT: Meeting at 9:30am

Dear Steve,


Just a note to confirm our meeting next Monday, the 16th at 9:30am. See you
there!


Best wishes, Ralph.


NNNN

+++ MESSAGE/S END

GA:
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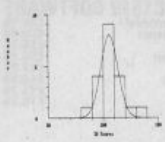

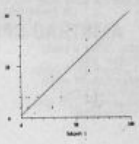

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NEW RELEASES

Amstrad CPC

Program *Terror of the Deep* **Type** Arcade Strategy **Price** £8.95 **Supplier** Mirrorsoft, Maxwell House, Worship Street, London EC2.

Respectable conversion of the game set in the Victoria era, which has you at the controls of a gothic submersible craft investigating the strange goings on under Loch Ness.

Program *Conflicts 1* **Type** Strategy **Price** £12.95 (tape), £17.95 (disc) **Supplier** PPS, 452 Stoney Stanton Road, Coventry CV6 5DG.

Compilation of three existing excellent titles from the PSS Wargamers Series, *Battle of Britain, Theatre Europe* and *Tobruk*. If you haven't got into computer wargaming yet and are looking for a good excuse, this is it – and it's great value too.

Program *Army Moves* **Type** Arcade **Price** £8.95 **Supplier** Imagine Software, 6 Central Street, Manchester M2 5NS.

See Spectrum listing for comment.

Program *Zap-Pak* **Type** Arcade Compilation **Price** £6.95 **Supplier** Players, Mercury House, Calleva Park, Aldermaston, Berks RG7 4QW.

Two games on a disc for £6.95: *Big Top Barney* and a Centipede clone, *Killerpede*.

Program *League Challenge* **Type** Strategy **Price** £2.99 **Supplier** Atlantis Software, 28 Station Road, London SE25 5AG.

Budget football management game from Atlantis.

Program *Chronos* **Type** Arcade **Price** £1.99 **Supplier** Mastertronic, 8–10 Paul Street, London EC2.

See Commodore 64 listing for comment.

Program *Strike* **Type** Arcade **Price** £2.99 **Supplier** Mastertronic, 8–10 Paul Street, London EC2.

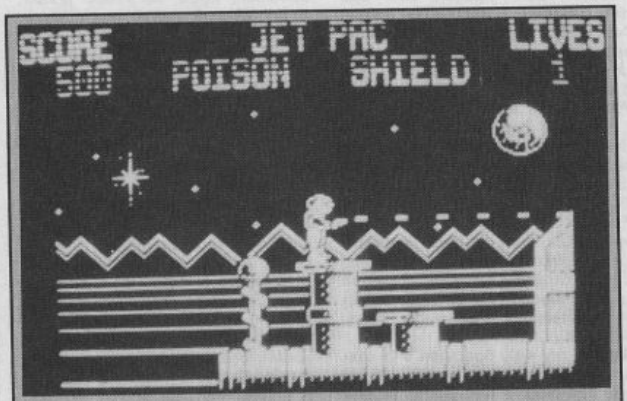
Program *Advanced OCP Art Studio* **Type** Application **Price** £24.95 (disc only) **Supplier** Rainbird, 74 New Oxford Street, London WC1.

Art package that has everything except the furry dice and go-faster stripes.

Program *Thrust II* **Type** Arcade **Price** £1.99 **Supplier** Firebird Silver, 74 New Oxford Street, London WC1.

Creditable follow-up to the original – well worth the outlay.

Program *Gunstar* **Type** Arcade **Price** £1.99 **Supplier** Firebird Silver, 74 New Oxford Street, London WC1.



Just before we start, let's clear up any sources of possible confusion. Hewson's latest game is called *Gunrunner*. but it hasn't got anything to do with gunrunning. The definitive, 'how many missiles can you sell to the Iranians without getting impeached' game has yet to be written. The fact is that the main character in this slickest of arcade titles, runs along, carrying a gun.

So here you are, in beautifully designed monochrome (as all Spectrum games of any class are) running left to right along ten levels of pipes, for reasons too silly to go into here.

This network has been infiltrated by baddies, and you simply must zap away at static targets as you find them, avoiding being taken out by moving aliens that are patrolling up and down at a pace and a half.

Various bits and pieces can be picked up along the way. Poison (a smart bomb), multi-fire, converting your trusty blaster into a weapon of awesome destructive capabilities, a jetpack and a shield . . . which will make you invulnerable for a short space of time.

Point One – the action is fast and tricky. *Gunrunner* is not going to be mastered in one afternoon. Point Two – the graphic design is delightful. The mono display looks clean and attractive, and of course, there are no attribute problems.

Point Three – Christian Urquhart (the author) whose other works to date include the much underrated Action Reflex, deserves a jolly good round of applause. Be prepared to view around the end of May.

See Commodore 64 listing for comment.

Program *Five Computer Hits* **Type** Compilation **Price** £6.95 **Supplier** Beau-Jolly, 29A Bell Street, Reigate, Surrey RH2 7AD.

Apple II

Program *Jewels of Darkness* **Type** Adventure Compilation **Price** £19.95 **Supplier** Rainbird Software, 74 New Oxford Street, London WC1A 1PS.

With a view to the vast American market, Rainbird convert much of their stuff onto the Apple now. This has Level 9's trilogy of *Snowball, Return to Eden* and *Worm in Paradise*. Apple adventurers cannot help but be pleased.

Atari ST

Program *Mean 18* **Type** Sports Simulation **Price** £29.99 **Supplier** US Gold, Units 2/3 Holford Way, Holford, Birmingham B6 7AX.

Now released over here by US Gold, we have this on import ages ago . . . and decided that *Leader Board* was by far the more playable game. Mean 18 does have one advantage however – you can play on real live courses, like the legendary Augusta. But do you really need two golf games?

Program *Sub-battle Simulator* **Type** Strategy **Price** £24.99 **Supplier** US Gold, Unit 2/3 Holford Way, Holford, Birmingham B6 7AX.

Program *Super Directory* **Type** Utility **Price** £24.95 **Supplier** Microdeal, Box 68, St Austell, Cornwall PL25 4YB.

Disc cataloguing utility running under Gem . . . Microdeal say that it's "natty". How quaint.

Atari XL/XE

Program *Zap-Pak* **Type** Arcade Compilation **Price** £4.95 **Supplier** Players, Mercury House, Calleva Park, Aldermaston, Berks RG7 4QW.

Excalibur and *Bubble Trouble* both on one disc for just under a fiver.

Program *Colony* **Type** Arcade **Price** £2.99 **Supplier** Bulldog, 8–10 Paul Street, London EC2.

Program *Invasion* **Type** Arcade **Price** £2.99 **Supplier** Bulldog, 8–10 Paul Street, London EC2.

Program *Hover Bover* **Type** Arcade **Price** £1.99 **Supplier** Mastertronic, 8–10 Paul Street, London EC2.

continued on page 58 ▶

Hall of Fame

Program *Arkanoid* **Type** Coin-op Conversion **Micro** Atari ST (also on 8-bit formats) **Price** £14.95 **Supplier** Imagine Software, 6 Central Street, Manchester M2 5NS.

More than just a clone

Our very first entrant into the (cue fanfare) *Popular Computing Weekly* Hall Of Fame might seem, at first, a bit of a strange choice. Just another coin-op conversion? And a rip off from a game almost ten years old to boot? Fair enough – but *Arkanoid* was a great game on most of the 8-bit formats. And on the ST it's almost perfect.

I came across *Arkanoid* just after it came out in the arcades, and you couldn't help but be impressed. The game design developed and expanded upon the *Breakout* concept in an original and very playable way – and the presentation and implementation were both excellent.

The contrast between generations of video machines could not have been brought home more. In the seventies, black and white *Breakout*. In the eighties, a sophisticated variant in colourful high-res graphics. The contrast made it even more impressive.

It was a natural for conversion to home computers and the 8-bits, particularly the Commodore 64, have all been very good – but now comes the Atari ST version, converted by Peter Johnson. And it's great.

Barely distinguishable from the coin-op, apart from the screen layout, it's not just the graphics but the sheer playability and addictiveness that have been carried over on to this format. After a while it dawns on you – *Arkanoid* is more than just a *Breakout* clone.

A ball is put into play up the screen towards an array of bricks – and will rebound back towards you, destroying a brick if it hits one. You must deflect the ball back up the screen using the paddle – if it passes you by, you lose a life.

Below left: the Space Invader screen. Below right: you have to clear all the bricks off the screen.

Left: the laser weapon option helps you to get through this section more quickly.

In *Breakout*, all you had to do was destroy all the bricks in the wall and it's the same here, except some bricks must be hit more than once before they disappear, and the array of bricks is usually not just a simple wall shape across the top of the screen. Often the arrays are fiendishly designed, interspersed with indestructible walls, so that mind boggling concentration and skill is needed to finish the section.

The other aspect of *Arkanoid* that makes it interesting is the introduction of extra powers – and obstructive aliens.

When some bricks are destroyed, they release one of seven different types of capsule, that falls towards the bottom of the screen. If you intercept the capsule, depending on what type it is, certain things will happen – suddenly your bat has lasers or the ball splits up into three pieces, etc. The intelligent use of these capsules is vital to success in the game.

You will find aliens moving down the screen towards you soon after the start of each screen. They can't harm you directly, and are destroyed either by contact with the bat or the ball – but the ball can take wicked deflections in the process. Beware.

The way you have to combine simple reflex skills (and sometimes *Arkanoid* is very, very fast indeed) and the thought required to formulate a strategy of which capsules to use to annihilate a particular array makes *Arkanoid* one of the most infuriating games around.

The sheer level of concentration, and the length of time it must be sustained alone make it a worthy entrant to the Hall of Fame. The take home message is simple. You want a great arcade game? Check this out in detail.

Hints Box
(valid for all versions)

General Tactics

Screen one – get a laser if you can – keep it and blast away.

Screen two – open up the right hand side with as little disturbance as possible, and hope for an early laser.

Screen three – very difficult to master. Imperative you get a catch if possible, which will allow you to bounce the ball around the corridors of gold bricks. Laser are useless – as a desperate measure, go for a 'divide'.

Screen four – get a laser, blast away.

Screen five – the Space Invader. Most bricks need two strikes to kill, and very few capsules (no lasers) are available. It's a hard slog.

Screen seven – a welcome return to the blasting, if you can get a laser.

Screen eight – a maze of gold bricks, with only seven real bricks to destroy . . . but it's tricky. Use a 'divide' or preferably a 'catch'.

Screen nine – it starts getting difficult, with some bricks hidden away in upturnen U-shapes of gold bricks . . . you wouldn't want us to give it all away anyway. Would you?

NEW RELEASES

◀ continued from page 56

BBC B

Program *Zap-Pak* **Type** Arcade Compilation **Price** £4.95 **Supplier** Players, Mercury House, Calleva Park, Aldermaston, Berks RG7 4QW.

Two games on a disc from budget label Players.

Program *Five Computer Hits* **Type** Compilation **Price** £6.95 **Supplier** Beau-Jolly, 29A Bell Street, Reigate, Surrey RH2 7AD.

Same titles as on the Electron version.

Program *Five Star Games* **Type** Compilation **Price** £9.95 **Supplier** Beau-Jolly, 29A Bell Street, Reigate, Surrey RG2 7AD.

Same titles as on the Electron version of the same – only *Psycastria* is out and *Moon Mission* is in.

C16/Plus 4

Program *Battle* **Type** Arcade Strategy **Price** £1.99 **Supplier** Mastertronic, 8–10 Paul Street, London EC2.

Battles rage in the North Sea as two companies battle it out over remaining oil reserves. One or two player.

Program *Five Computer Hits* **Type** Compilation **Price** £6.95 **Supplier** Beau-Jolly, 29A Bell Street, Reigate, Surrey RH2 7AD.

Matrix, Hyperforce, Myriad, Panik and *Cavefighters* are the five offenders on this line up.

Program *Five Star Games* **Type** Compilation **Price** £9.95 **Supplier** Beau-Jolly, 29A Bell Street, Reigate, Surrey RH2 7Ad.

Slightly higher standard of bash, with *Manic Miner, Lazerzone, Leapin' Louie, Hustler* and *Starburst.*

Commodore 64

Program *Conflicts 1* **Type** Strategy **Price** £12.95 (tape), £17.95 (disc) **Supplier** PSS, 452 Stoney Stanton Road, Coventry CV6 5DG.

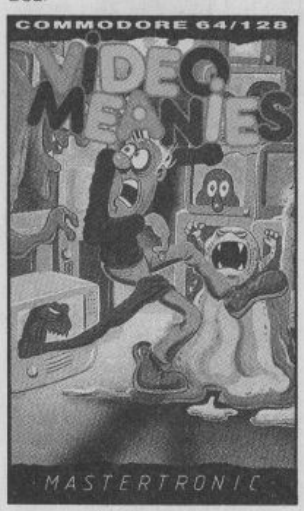
See Amstrad CPC listing for comment – contains *Battle of Britain, Theatre Europe* and *Falklands '82.*

Program *Army Moves* **Type** Arcade **Price** £8.95 **Supplier** Imagine Software, 6 Central Street, Manchester M2 5NS.

See Spectrum listing for comment.

Program *Dogfight 2187* **Type** Arcade **Price** £9.99 (tape), £12.99 (disc) **Supplier** Starlight Software, via Ariolasoft, 68 Long Acre, Covent Garden, London WC2E 9JH.

Program *Video Meanies* **Type** Arcade **Price** £1.99 **Supplier** Mastertronic, 8–10 Paul Street, London EC2.



Program *Void Runner* **Type** Arcade **Price** £2.99 **Supplier** Mastertronic, 8–10 Paul Street, London EC2.

Jeff Minter's weebles away in a kind of Centipede fashion – if you feel you have to classify these things.

Program *Amaroute* **Type** Arcade **Price** £2.99 **Supplier** Mastertronic, 8–10 Paul Street, London EC2.

Program *Strike* **Type** Arcade **Price** £2.99 **Supplier** Mastertronic, 8–10 Paul Street, London EC2.

Ten-pin bowling really is getting popular these days. Isn't it? This one costs £2.99.

Program *UFO* **Type** Arcade **Price** £1.99 **Supplier** Firebird Silver, 74 New Oxford Street, London WC1.

Polished, if somewhat limited, shooter from Odin. Oh well, it looks pretty anyway.

Program *Gunstar* **Type** Arcade **Price** £1.99 **Supplier** Firebird Silver, 74 New Oxford Street, London WC1.

Shooty-shooty and spot the artistic influence as you rotate through five stages.

Program *Zone Ranger* **Type** Arcade **Price** £1.99 **Supplier** Firebird Silver, 74 New Oxford Street, London WC1.

This is 1987. *Zone Ranger* is a pretty flakey *Asteroids* varient originally knocked out by Activision in 1984. The jury can draw its own conclusions, m'lud.

Program *Five Star Games* **Type** Compilation **Price** £9.95 (tape), £14.95 (disc) **Supplier** Beau-Jolly, 29A Bell Street, Reigate, Surrey RH2 7AD.

An impressive array of hits on this one – headed up by *Paradroid* with *Cauldron II, Dandy, Who Dares Win II* and *Strike Force Cobra* close behind.

On the other hand, wouldn't you prefer the faster version of *Paradroid* with the improved *Uridium* from Hewson – a double cassette they released just before Christmas?

Electron

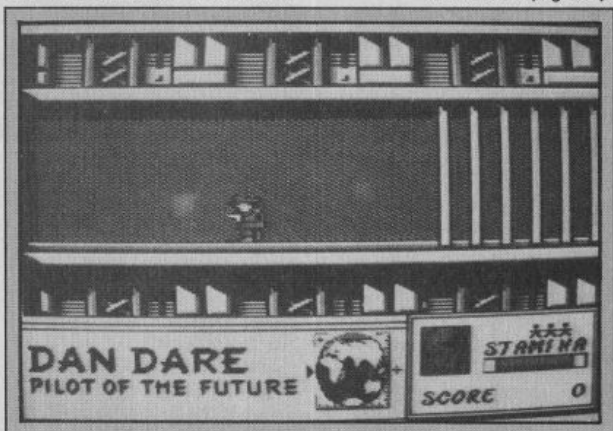
Program *Five Computer Hits* **Type** Compilation **Price** £6.95 **Supplier** Beau-Jolly, 29A Bell Street, Reigate, Surrey RH2 7AD.

Fair selection of arcade titles: *Croaker, Swag, Blagger, Millionaire* and the immortal *Bug Eyes II.*

Program *Five Star Games* **Type** Compilation **Price** £9.95 **Supplier** Beau-Jolly, 29A Bell Street, Reigate, Surrey RH2 7AD.

Galaforce and *Thrust* had the Popular game droids working overtime – others include *Karate Combat, Stockcar* and *Psycastria.*

continued on page 61 ▶



Virgin Games' *Now Games 4* has got to be a contender for the title of best compilation ever, with a selection of five games . . . at least three of which are still worth full price. Cannot be bad, John.

Virgin's own *Dan Dare* stars, an arcade adventure with graphics that wouldn't look out of place at the Louvre. It's a 'save the earth' job so be careful how you go.

***Hacker* was a none too bad yesteryear offering from Activision – although it had not very much at all actually, to do with hacking. Still, you control a robot through a system of tunnels that extends around the world, in an attempt to thwart yet another plot at global domination.**

Things are looking pretty bleak in *Mission Omega* too – an object the size of the moon is hurtling towards Earth. The good news is that we are set to destroy it with a mega missile. The bad news . . . you've landed on the object and are nosing around. Build the robots and explore the complex. Solid strategy based entertainment.

***Back to the Future* was one of Activision's less successful efforts, but it's still an adequate arcade/puzzle adventure, and the package is rounded up with *Jonah Barrington's Squash*, itself one of a kind on the home computer.**

The *Popular* clapometer says that *Now Games 4* is worth getting if three out of five are unique to your collection, but it won't be appearing on next week's programme.

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◀ continued from page 58

MSX

Program *M-Droid* **Type** Arcade **Price** £1.99 **Supplier** Blue Ribbon, CDS House, Beckett Road, Doncaster DN2 4AD.

Program *Astro Plumber* **Type** Arcade **Price** £1.99 **Supplier** Blue Ribbon, CDS House, Beckett Road, Doncaster DN2 4AD.

What is the call-out charge from Alpha Centuri? Anyway, in this one you fly around *Jet-Pac* style sealing leaking pipes with your plasma gun. That's *Astro Plumbing* for you.

Program *Diamond Mine II* **Type** Arcade **Price** £1.99 **Supplier** Blue Ribbon, CDS House, Beckett Road, Doncaster DN2 4AD.

Program *Darts* **Type** Arcade **Price** £1.99 **Supplier** Blue Ribbon, CDS House, Beckett Road, Doncaster DN2 4AD.

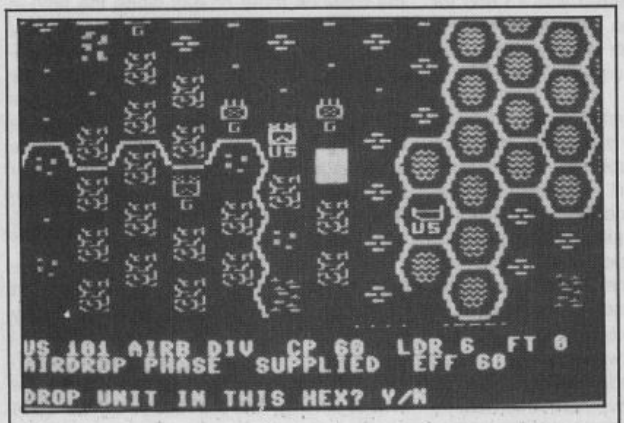
One of four new releases from the CDS budget software label, Blue Ribbon – all for the MSX.

Program *Army Moves* **Type** Arcade **Price** £8.95 **Supplier** Imagine Software, 6 Central Street, Manchester M2 5NS.

See Spectrum listing for comment.

Program *Survivors* **Type** Arcade Strategy **Price** £1.99 **Supplier** Atlantis Software, 28 Station Road, London SE25 5AG.

Strategy arcade game with its roots firmly in *Boulderdash* – but with a novel twist.



US software company Strategic Simulations Inc has long been recognised as the leader in computerised wargaming with a long line of outstanding product.

Now, in what must be one of the bargains of the year, US Gold has released four classic SSI games in one pack under the apt title of *War Game Greats*.

Three of the four are historical World War II scenarios. *Knights of the Desert* puts you in the place of Rommel during the North African compaigns of 1941.

Three years later, you command the Allied forces on D-Day in *Battle for Normandy*. And in *Tigers in the Snow*, you can play either the German or the Allied forces during the Battle of the Bulge, the final attempt by the Germans to counter the Allied drive across Europe following D-Day.

The trio have much in common. All screen displays are based on hex "squares", with suitable colour terrain and clear unit identification. There's no hidden movement, which is a disappointment, but you do have to deal with supply problems, movement over various types of terrain, and levels of attack and defence from recon/probe to all-out onslaught, and from retreat to counter-attack.

The fourth game, *Combat Leader*, is of a different sort. Combining strategy with arcade action, it puts you in control of an armoured division comprising tanks, armoured cars, and infantry support (anti-tank gunners, mortar unit, etc).

Control is by joystick and keyboard combined, there's hidden movement in real-time, and a variety of scenarios to keep interest high. The graphics aren't brilliant but are more than adequate.

At £12.95 on tape, or £17.95 on disc, *War Game Greats* is unbeatable value.

PC and Compatibles

Program *A-B-C* **Type** Application **Price** £149 + VAT **Supplier** A-B-C Systems Ltd, Regent House, 188 High Street, Sutton, Surrey SM1 1HH.

Full accounts package, plus wordprocessing, database, spreadsheet and desk accessories, all on one disc. Certainly warrants closer inspection.

Spectrum Plus 2/128K

Program *The Pawn Type* Text only Adventure **Price** £14.95 **Supplier** Rainbird, 74 New Oxford Street, London WC1.

Now underlings can play the game of the 16-bit adventure players, although no graphics, naturally. Don't worry boys, they'll get around to the Oric eventually.

Spectrum

Program *Conflicts 1* **Type** Strategy **Price** £12.95 **Supplier** PSS, 452 Stoney Stanton Road, Coventry CV6 5DG.

See Amstrad CPC for comment – but contains *Battle of Britain, Theatre Europe* and *Falklands '82*.

Program *Army Moves* **Type** Arcade **Price** £7.95 **Supplier** Imagine Software, 6 Central Street, Manchester M2 5NS.

First of a series of games published by Imagine, written by Madrid based software house, Dinamic. It's a horizontal scroller, with you controlling a different item of equipment (helicopter, jeep, etc), in each phase. We found the Commodore version almost unplayable, but it's acceptable on other formats.

Program *Cosmic Shock Absorber* **Type** Arcade **Price** £7.95 **Supplier** Martech, Martech House, Bay Terrace, Pevensey Bay, East Sussex.

Self-consciously wacky arcade shooter that isn't as bad as you might think.

Program *Strike* **Type** Arcade **Price** £2.99 **Supplier** Mastertronic, 8–10 Paul Street, London EC2.

See Commodore 64 listing for comment.

Program *Chronos* **Type** Arcade **Price** £1.99 **Supplier** Mastertronic, 8–10 Paul Street, London EC2.

Horizontal scroller that won't set the world alight, but might just pass away the odd rainy afternoon.

CHARTS

Top Twenty

1	(1)	BMX Simulator	Code Masters
2	(3)	Feud	Bulldog
3	(2)	Six Pack	Elite
4	(8)	Football Manager	Addictive
5	(7)	Four Great Games	Microvalue
6	(12)	Konami's Coin-op Hits	Imagine
7	(6)	Gauntlet	US Gold
8	(19)	Ollie and Lisa	Firebird
9	(10)	180	Mastertronic
10	(4)	Deeper Dungeons	US Gold
11	(16)	Paperboy	Elite
12	(14)	Ninja	Mastertronic
13	(5)	Enduro Racer	Activision
14	(–)	Curse of Sherwood	Mastertronic
15	(19)	Nemesis	Konami
16	(–)	Thrust 2	Firebird
17	(–)	Footballer of the Year	Gremlin Graphics
18	(12)	Hit Pack	Elite
19	(–)	Vampire	Code Masters
20	(–)	Olympic Spectacular	Alternative

All figures compiled by Gallup/Microscope

PUZZLE

Puzzle No 255

I dropped my pocket calculator the other day and since then the display has gone haywire. Only the zero is still displayed as a zero. Of the rest, most, or perhaps all, of the digits are displayed incorrectly. For example, instead of displaying a '1' the calculator displays another digit.

Fortunately, the errors are constant in that a certain digit is always replaced by the same digit whenever it occurs so, provided that you know which digit represents which value, the calculator is still usable.

However, the display can be a bit bizarre as the following two additions will show:

123 + 456 = 789
741 + 852 = 963

The mathematical accuracy is quite correct, it is just the display that is wrong. As a clue, I do know that '7' is even!

Can you find what the above two additions are?

Solution to Puzzle No 250

A = 234 and B = 205. These give values across of 42025 and 54756.

Both A and B are three digit numbers, and to each have five digit squares must lie in the range 100 to 316.

Loop A generates all possible values in this range and then the program tests to determine if the digit which interlocks both of these values in the grid is identical. Also the third digit of the square must be a seven as this is already in place in the grid. This is tested for in line 140. Once possible values for A have been found the second loop tests for value B.

Lines 180 to 200 test the other three points of intersection in the grid and any values which pass this test are printed out.

Winner of Puzzle 250

This week's winner is Dr I S Logan, of Skellingthorpe, Lincoln, who will receive £10.

Rules

The closing date for Puzzle 255 is May 21. Answers should include a program listing if possible.

```
100 FOR A=100 TO 316
110 AS=A*A
120 K$=STR$(A):L$=STR$(AS)
130 IF MID$(K$,3,1)<>MID$(L$,2,1) THEN 230
140 IF MID$(L$,3,1)<>"7" THEN 230
150 FOR B=100 TO 316
160 BS=B*B
170 M$=STR$(B):N$=STR$(BS)
180 IF MID$(L$,4,1)<>MID$(M$,3,1) THEN 220
190 IF MID$(N$,2,1)<>MID$(K$,1,1) THEN 220
200 IF MID$(N$,4,1)<>MID$(M$,1,1) THEN 220
210 PRINT K$;" ";L$;"   ";M$;" ";N$
220 NEXT B
230 NEXT A
```

ZIGGURAT

The desktop truth

Everyone's talking about it, and a few are actually doing it. Desktop publishing is becoming ever-more accessible, and I published my own booklets at very low cost with the most basic of equipment.

I spent two years working as a magazine editor on a consumer magazine which incurred monthly production costs in excess of £10,000. When the owners of the magazine decided to suspend publication, I began to write for magazines on other subjects, but the refusal of my former competitors to carry my articles prompted me to start looking at ways in which I could publish my own work.

I wrote the text for a 32 side (16 page) booklet and set about obtaining quotes for its production. I was in for a shock, since the cheapest quote I obtained was £1,650 for 5,000 copies – far too expensive for my slender means. Smaller print runs pushed the unit costs up from an acceptable 30p to over £1.

At this time I was helping some friends clear out a barn and we came across a Gestetner electric duplicator which was covered in dust and dirt and which had not worked for some years due to a fault which the engineer had proclaimed too expensive to warrant repair. I jumped at the opportunity to buy this machine for £10, and my mechanic friend and I set out to repair it.

Immediately I ran into problems. Firstly, the MPS 801 print-out was too faint for the scanner to function, and three new ribbons brought about no improvement. Eventually I tracked down some special stencils which could be cut and then glued together again, and with a borrowed Taxan dot matrix printer interfaced to my CBM 64 I cut the stencils and did a print run of 500 copies.

Many people would choose a daisywheel printer for stencil cutting. This gives a nice, clean print but tends to lose the centres out of o's, b's and so on – giving a rotten result with any letter which has an enclosed area. The dot-matrix printer not only leaves the stencil intact, but may also be used for graphics work with the correct software – an area I have still to explore.

Printing costs with my outfit are incredibly low: 1,000 A4 sheets printed both sides will cost in the region of £5, depending on local material costs. My booklet, which comprises 8 A4 sheets (one coloured) costs roughly £35 per thousand, which is a damn sight more satisfactory than the £1650 per 5,000 I was quoted.

Whether you print by off-set, stencil, photocopier or computer printer, you are now able to take advantage of specialised publishing software if you have one of the better software supported micros. As ever, the CBM 64 more or less leads the field in this new and exciting software. *The Print Shop, Print Master Fleet Street Editor/Publisher* and *Newsroom* programmes all allow a mixture of print and graphics, and Geos looks even more exciting if early reports are anything to go by. QL users can take advantage of *Front Page* which, at just over £20, seems very good value for money. Amstrad and Atari computers also have available software.

For stencil duplicating, any word processing package will take care of text, and graphics may be added by hand by simply putting holes in the stencil with a pointed instrument! This gives an effect which matches the text if a dot-matrix is used for stencil cutting, and the results can be quite good.

I've now written the text for three further booklets, to be financed by the proceeds from the sale of the first. The covers will be produced on a colour photocopier to give the booklets a little more class. If funds permit, I shall obtain Geos in order to put illustrations within the booklets.

Jim Tyler

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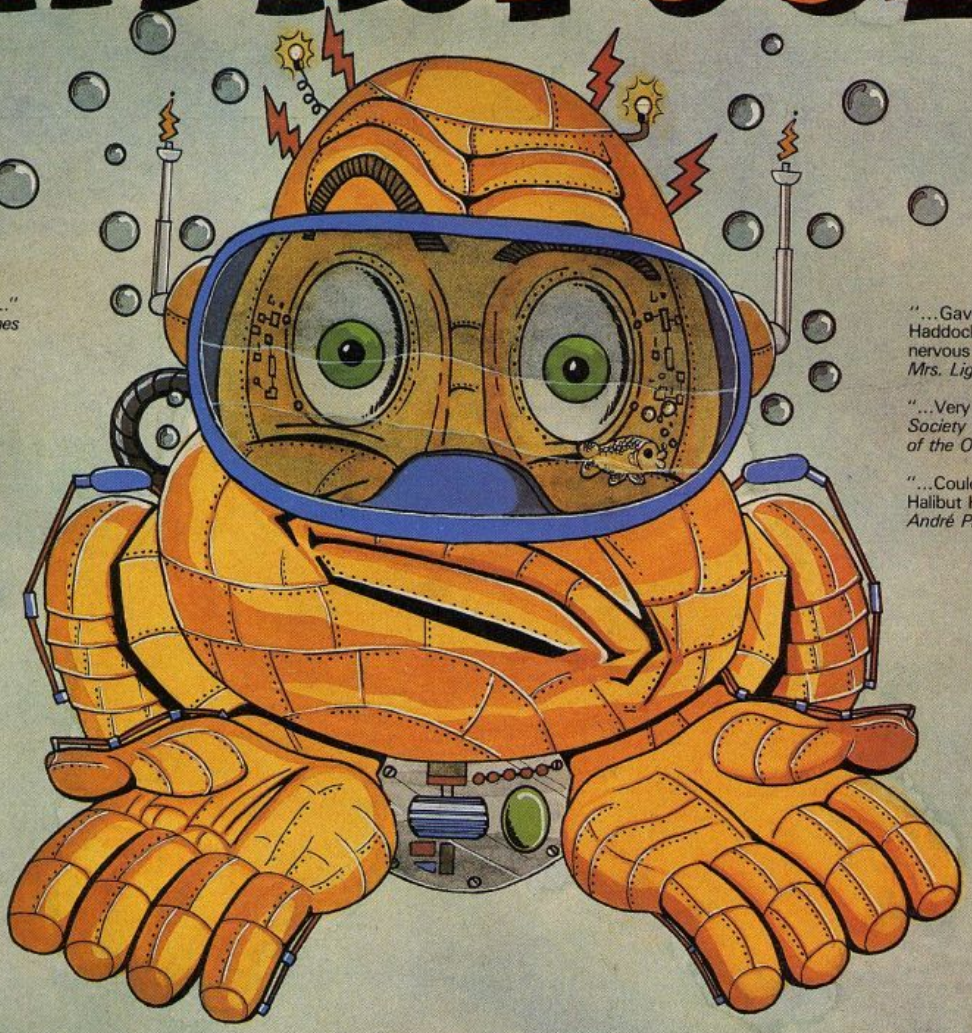

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